DOCKET NO.: SPC-948US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

Kevan Hatchman, Elvin Lukenbach, Laura McCulloch, Benjamin Wiegand

Serial No.: 10/018,238 **Group Art Unit:** Not yet assigned

Filing Date: December 7, 2001 **Examiner:** Not yet assigned

For: PERSONAL CARE FORMULATIONS

DATE OF DEPOSIT: April 9, 2002

I HEREBY CERTIFY THAT THIS PAPER IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS FIRST CLASS MAIL, POSTAGE PREPAID ON THE DATE INDICATED ABOVE AND IS ADDRESSED TO ATTENTION: OFFICE OF PETITIONS, BOX DAC, ASSISTANT COMMISSIONER FOR PATENTS, WASHINGTON, DC 20231.

Wendy A. Choi

Wendy A. Choi, Esquire
REGISTRATION NO.: 36,697

BOX DAC
Office of Petitions
Assistant Commissioner for Patents
Washington, DC 20231

PETITION FOR RETROACTIVE LICENSE UNDER 37 CFR 5.25

It is respectfully requested that this petition for license for foreign filing attached hereto be granted retroactively under the provisions of 37 CFR 5.25.

Previous Licenses (☐ applicable ☒ not applicable)

Attached are copies of :

☐ previous licenses

☐ the filing receipt license

issued on this invention before the export.

Material filed abroad without a license

Attached is a copy of the material that was filed abroad without a license for foreign filing.

Foreign Countries and dates of filing of material for which retroactive license requested per 37 CFR 5.25(a)(1).

With respect to the material for which a retroactive license is requested, each foreign country in which the patent application material was filed and the date it was filed is as follows:

Foreign Country	Date	Application No.
Great Britain (UK Patent Office)	10 June 1999	GB 99 13408.2
Germany (EPO PCT Receiving Office)	9 June 2000	WO 00/76460
Germany (European Patent Office)	5 December 2001	EP 00945731.8
Australia	7 December 2001	ASL 59716/00

Verified Statement(s)

Also attached hereto are the verified statement(s) (oath or declaration) of:

Wendy A. Choi, Esq. attorney for Johnson & Johnson Consumer Companies, Inc., joins assignee of 10/018,238

which confirm(s) that, in accordance with 37 CFR 5.25(a)(3)(I)-(iii),

(a) the subject matter in question was not under a secrecy order at the time it was filed abroad, and that it is not currently under a secrecy order;

(b) the license is being diligently sought after discovery of the proscribed foreign filing; and

(c) an explanation of why the material was filed abroad through error and without deceptive intent without the required license under §5.11 first having been obtained.

Fee under 37 CFR 1.17(h) $130.00

☒ A Check is Enclosed in the Foregoing Amount Due.

☒ The Commissioner is further authorized to charge any fees related to any such extension of time to deposit account 23-3050. This sheet is provided in duplicate.

Date: April 9, 2002

Wendy A. Choi
Registration No. 36,697

Woodcock Washburn LLP
One Liberty Place - 46th Floor
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DOCKET NO.: SPC-948 US **PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of	:	Kevin Hatchman, Elvin Lukenbach, Laura McCulloch and Benjamin Wiegand.		
Serial No.	: 10/018,238	**Group No.**	:	Not yet assigned
Filed	: 12/07/01	**Examiner**	:	Not yet assigned
For	: PERSONAL CARE FORMULATIONS			

BOX DAC
Office of Petitions
Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

STATEMENT OF FACTS REGARDING FAILURE TO SEEK U.S. FOREIGN FILING LICENSE UNDER 35 U.S.C § 184

Applicants respectfully request a retroactively granted license under 35 U.S.C. § 1811 to the subject matter of GB 9913408.2, WO 00/76460 and related national stage applications, which were filed outside of the U.S. without a prior license from the Commissioner of Patents and Trademarks through error and without deceptive intent.

Summary of Facts

The subject matter of GB 9913408.2, WO 00/76460 and related national stage applications is directed to personal care formulations, such as shampoo and body wash. More specifically, the subject matter relates to clear, gel-like personal care formulations that contain surfactant, oil and water. The oil may be a mineral oil, fatty ester, glyceride, terpene or silicone oil and the surfactant has an HLB of 2-10.

The technology that is the subject-matter of the applications was jointly developed by Albright & Wilson Surfactants, a subsidiary of Rhodia Consumer Specialities, Ltd. (A&W) and Johnson & Johnson Consumer Companies, Inc. (J&J). A&W is located in the U.K. and develops and manufactures gels. J&J is located in the U.S. and develops, manufactures and sells hair and skin care products. The two parties were working together initially under a secrecy agreement and eventually under a joint development agreement to develop suitable A&W gels for J&J's hair and skin care products.

During a teleconference between personnel of both parties on June 6, 1999, J&J was informed by A&W that A&W intended to file a provisional British patent application directed to an invention made solely by personnel of A&W. Without

review by any personnel at J&J, this application (GB 9913408.2) was filed on June 10, 1999 by Mr. Roger Savidge, a patent attorney for Rhodia. As a provisional British patent application, it did not name any inventors (only A&W as the applicant). A copy of the application, as filed, was faxed to J&J on June 10, 1999 (***Exhibit 1***). After reviewing the patent application, J&J determined that J&J personnel (who made the invention in the U.S.) were at least joint inventors on the provisional British patent application. Through ignorance of the requirement, neither party realized that, because the invention disclosed in the British application was at least partially made in the U.S., that it was necessary to seek a foreign filing license in the U.S. prior to filing the British application.

On the eve of the Paris Convention deadline of June 9, 2000, Mr. Savidge contacted Ms. Michele Mangini, a patent attorney with J&J, to discuss filing a PCT application based upon the provisional British application by June 9, 2000. On June 8, 2000, Ms. Mangini signed, as Assistant Secretary of J&J, and returned via facsimile a document appointing Mr. Savidge as the representative for the PCT application (***Exhibit 2***).

The PCT application was filed on June 9, 2000 (WO 00/76460)(***Exhibit 3***). There were four inventors listed on the PCT application:

(1) Kevan HATCHMAN (A&W)
(2) Elvin LUKENBACH (J&J)
(3) Laura McCULLOCH (J&J)
(4) Benjamin WIEGAND (J&J)

Inventors (2)-(4) made at least a part of their contribution to the claimed invention in the U.S. and while residing in the U.S. Mr. Savidge handled the prosecution of the PCT application with input from J&J. The PCT application is essentially identical to the provisional British application. In haste to secure a filing date and again through continuing ignorance of the requirement, neither party realized that, because the invention disclosed in the British and PCT applications was at least partially made in the U.S., that it was necessary to seek a foreign filing license in the U.S. prior to filing the PCT application and seek a retroactive license with respect to the provisional British application.

At the 30-month deadline for entering Chapter II of the PCT, Mr. Savidge engaged a U.S. patent attorney, Mr. Marshall Chick of FRISHAUF, HOLTZ, GOODMAN, LANGER & CHICK, to file a U.S. national application (SN 10/018,238 on December 7, 2001) based on the PCT application. National applications were also filed at the EPO and in Australia, based on instructions from Mr. Savidge (***Exhibit 4*** and ***Exhibit 5***, respectively). Instructions were sent to a Canadian agent to file a Canadian national application. However, due to conflicting instructions by J&J, the Canadian agent did not file (and has not yet filed) the application in Canada (***Exhibit 6***). Applicants intend to file the application in Canada, provided that and only after the retroactive license requested herein is granted.

On or about January 15, 2002, Mr. Chick contacted J&J to collect details to prepare a post-filed declaration, power of attorney and assignment (***Exhibit 7***). In reviewing the application papers from Mr. Savidge, Mr. Chick discovered that there was no record of the granting of a U.S. foreign filing license. He inquired whether

J&J had sought a U.S. foreign filing license and could not confirm that either party had sought such a license.

On February 6, 2002, Mr. Chick forwarded the U.S. application to me (***Exhibit 8***), Wendy Choi of WOODCOCK WASHBURN LLP, a law firm now representing J&J, to handle the prosecution of the application, including seeking a retroactive foreign filing license.

I have reviewed all of the relevant documents and discussed the history of the filings with Ms. Mangini, Mr. Savidge and Dr. Wiegand. As a result of my review, I have prepared this statement of facts to support the petition for a retroactively granted license under 37 C.F.R. § 5.25.

Conclusion

Applicants respectfully request a retroactively granted license under 35 U.S.C. § 184 and 37 C.F.R. § 5.25 to the subject matter of GB 9913408.2 and WO 00/76460 and related national stage applications, which were filed outside of the U.S. without a license from the Commissioner of Patents and Trademarks. Applicants submit that:

(1) the applications that were filed without the required licenses under 35 U.S.C. § 184 were *filed through error* and *without deceptive intent*;

(2) the subject matter of the applications was not under a secrecy order under 35 U.S.C. § 181 at the time that the applications was filed abroad, and the subject matter is not currently under a secrecy order; and

(3) they are promptly seeking a retroactive license under 35 U.S.C. § 184 and 37 C.F.R. § 5.25 after discovery of their error in not seeking the required license.

The required fee in accordance with 37 C.F.R. § 1.17(h) is enclosed.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under 18 U.S.C. § 1001.

Respectfully submitted,

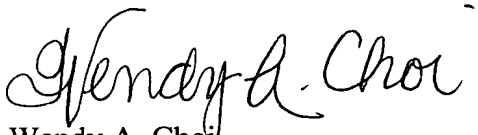

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Exhibit 1

fax message

From	R G M Savidge Corporate Patents Mgr	Tel	0121 420 5430
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To	Ben Wiegand	Org	Johnson & Johnson
		Fax	001 908 874 1126
Page	4 of 32	Date	June 10, 1999
		Ref	MPL315/GB/RGMS PBF1
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GB13408.2
filed 06/10/99
British Provisional
Priority Document

Dear Ben

RINGING GEL TECHNOLOGY

As promised I enclose a copy of our informal preliminary patent application which was filed at the UK Patent Office today in order to secure a priority date for a future substantive patent application to be filed within the next 12 months. This application does not specify the inventorship.

Please let me have any comments or suggested additions or modifications. If there are any points of substance I will file a further improved text.

I also enclose a copy of our EP O 598 335 which was filed six years ago and then abandoned. Our corresponding Canadian application may still be revivable until November of this year.

Regards.

Encs

MPL315

PERSONAL CARE FORMULATIONS

The present invention relates to shampoo or cleaning compositions suitable for personal care applications in the form of I_1 mesophase systems containing dispersed oil.

Dispersing oil in aqueous shampoo and body wash formulations has presented problems. To prevent the oil phase separating it must either be: (A) emulsified which involves dispersing the oil as colloidal single droplets: (B) microemulsified which involves forming a micellar solution with oil incorporated into surfactant micelles: (C) suspended in a structured surfactant system which typically comprises a dispersion of a surfactant mesophase in aqueous electrolyte: or (D) incorporated into a water soluble solid, pasty or gelatinous composition.

With the exception of microemulsions which are clear, thermodynamically stable, micellar solutions, the foregoing systems are necessarily opaque and contain the oil dispersed in a relatively coarse form, which does not deposit satisfactorily on skin or hair.

However microemulsions are difficult to formulate using the surfactants which are most effective in body wash and other personal care formulations and contain relatively low concentrations of surfactant.

We have now discovered that oil may be stably incorporated into the structure of an I_1 phase to form a clear gel-like composition which contains higher concentrations of surfactant and oil than conventional microemulsions, but, which dissolves in water to form a microemulsion. The novel oil-in-I_1 compositions also form microemulsions on heating.

Surfactants are known to form mesophases or liquid crystal phases at concentrations above approximately 30% by weight based on the weight of water and surfactant. Mesophases are phases which exhibit a degree of order intermediate between typical liquids and solids. Generally mesophases combine long range order associated with crystals, with fast molecular motion common to liquids.

The formation of detergent mesophases is well documented. Different surfactants and surfactant mixtures differ widely in their ability to form the numerous different mesophases, and in respect of the conditions of concentration and temperature at which they are formed. For a typical surfactant of the type normally used in cleaning products the following mesophases are usually observed. The concentrations given are illustrative only and may vary considerably from one surfactant or surfactant mixture to the next.

Below approximately 30% surfactant an isotropic L_1 phase is formed (with micelles of surfactant in water). Above 30% surfactant many detergents form a M phase which is not normally used in personal care applications since it dos not show suitable flow characteristics and is difficult to dissolve or disperse in water. Above the concentrations required to form an M phase, but usually at concentrations of less than 80% active surfactant, i.e. 60%-80% a G-phase is formed. At concentrations higher than those required to form a G-phase, i.e. typically greater than 80% active surfactant, most surfactants form a hydrated solid, and some, especially non-ionic surfactants form a liquid phase containing dispersed micelle sized droplets of water - an inverted micellar solution known as an L_2 phase. L_2 detergent systems do not disperse readily in water and have a tendency to form undesirable gels, e.g. M phases, on dilution.

Some surfactants form viscous isotropic or VI phases. These are immobile phases usually with a vitreous appearance, and have been relatively little studied compared to the other phases discussed above. They have been virtually ignored in the context of formulating cleaning compositions because most of the surfactants and surfactant systems which are commonly used in cleaning compositions do not form VI phases, at least at normal temperatures, or form them only within narrow concentration ranges and because their known properties as immobile gels has deterred formulators from investigating them. They are recognised as being the most viscous of the lyotropic mesophases.

The different surfactant phases can be recognised by a combination of appearance, rheology, textures under the microscope, electron microscopy and x-ray diffraction or neutron scattering. A detailed description, with illustrations, of the difference textures observable using a polarising microscope, is to be found in the paper by Rosevear JAOCS Vol 31, p628.

The following terms may require explanation or definition:

The "hydrophilic: lipophilic balance", or "HLB" value is used as a measure of the relative affinities of the surfactants for water and oil respectively and correlates with their effectiveness as emulsifiers. HLB value can easily be calculated for alcohol ethoxylates since it is one fifth of the weight percent of ethylene oxide based on the total mole weight. Other surfactants can be assigned equivalent values by applying more complicated formulae or by measuring their relative affinity for water and oil. An HLB value of 20 represents a completely water soluble oil insoluble surfactant, while an HLB value of 0 represents a completely oil soluble and water insoluble surfactant.

"Optically isotropic" surfactant phases do not normally tend to rotate the plane of polarisation of plane polarised light. If a drop of sample is placed between two sheets of optically plane polarising material whose planes are at right angles, and light is shone on to one sheet, optically isotropic surfactant samples do not appear substantially brighter than their surrounding when viewed through the other sheet. Optically anisotropic materials appear substantially brighter. Optically anisotropic mesophases typically show characteristic textures when viewed through a microscope between crossed polarisers, whereas optically isotropic phases usually show a featureless continuum.

"Newtonian liquids" have a viscosity which remains constant at different shear rates. For the purpose of this specification, liquids are considered Newtonian if the viscosity does not vary substantially at shear rates up to 1000 sec^{-1}.

"Lamellar" phases are phases which comprise a plurality of bilayers of surfactant arranged in parallel and separated by liquid medium. They include both solid phases and the typical form of the liquid crystal G-phase. G-phases are typically pourable, non-Newtonian, anisotropic products. They are typically viscous-looking, opalescent materials with a characteristic "smeary" appearance on flowing. They form characteristic texture under the polarising microscope and freeze fractured samples have a lamellar appearance under the electron microscope. X-ray diffraction or neutron scattering similarly reveal a lamellar structure, with a principal peak typically between 4 and 10nm, usually 5 to 6nm. Higher order peaks, when present occur at double or higher integral multiples of the Q value of the principal peak. Q is the momentum transfer vector and is related, in the case of lamellar phases, to the repeat spacing d by the equation $Q=\frac{2n}{d}$ [pi] where n is the order of the peak.

G-phases, however, can exist in several different forms, including domains of parallel sheets which constitute the bulk of the typical G-phases described above and spherulites formed from a number of concentric spheroidal shells, each of which is a bilayer of surfactant. In this specification the term "lamellar" will be reserved for compositions which are at least partly of the former type. Opaque compositions at least predominantly of the latter type in which the continuous phase is a substantially isotropic solution containing dispersed spherulites are referred to herein as "G-phase compositions". G-phases are sometimes referred to in the literature as $L_{(alpha)}$ phases.

L_1-phases are mobile, optically isotropic, and typically Newtonian liquids which show no texture under the polarising microscope. Electron microscopy is capable of resolving the texture of such phases only at very high magnifications, and X-ray or neutron scattering normally gives only a single broad peak typical of a liquid structure, at very small angles close to the reference beam. The viscosity of an L_1-phase is usually low, but may rise significantly as the concentration approaches the upper phase boundary.

"M-phases" are typically immobile, anisotropic products resembling low melting point waxes. They give characteristic textures under the polarising microscope, and a hexagonal diffraction pattern by X-ray or neutron diffraction which comprises a major peak, usually at values corresponding to a repeat spacing between 4 and 10nm, and sometimes higher order peaks, the first at a Q-value which is $3^{0.5}$ times the Q-value of the principal peak and the next double the Q-value of the principal peak. M-phases are sometimes referred to in the literature as H-phases.

The viscous isotropic or "VI" phases are typically immobile, non-Newtonian, optically isotropic and are typically transparent, at least when pure. VI phases have a cubic symmetrical diffraction pattern, under X-ray diffraction or neutron scattering, with a principal peak and higher order peaks at $2^{0.5}$ and $3^{0.5}$ times the Q-value of the principal peak.

These cubic liquid crystalline phases are sometimes observed immediately following the micellar phase at ambient temperature as the concentration of surfactant is increased. It has been proposed that such VI phases, sometimes referred to as I_1 phase, may arise from the packing of micelles (probably spherical) in a cubic lattice. At ambient temperature a further increase in surfactant concentration usually results in hexagonal phase (M_1), which may be followed by a lamellar phase (G). I_1 phases, when they occur, are usually only observed over a narrow range of concentrations, typically just above those at which the L_1-phase is formed. The location of such VI phases in a phase diagram suggests that the phase is built up of small closed surfactant aggregates in a water continuum.

An inverse form of the I_1 phase (the I_2 phase) has also been reported, possibly between the inverse hexagonal (M_2) and L_2 phases. It consists of a surfactant continuum containing a cubic array of inverted micelles. An alternative form of the VI phase called the V_1 phase has been observed at concentrations between the M and G phases and may comprise a bicontinuous system. This may exhibit an even higher viscosity than the I_1. An inverse phase, the V_2 phase, between the G and M_2 phases has also been postulated.

VI phases are typically examples of "ringing gels". When a jar or beaker containing such a phase is sharply struck, a distinctive vibration can be felt in the composition.

The I_1/L_1 transition temperature will be referred to herein as the melting point of the I_1 phase for convenience, although it is not strictly speaking the melting point since the VI phases are not solids.

All references herein to the formation or existence of specific phases or structures are to be construed, unless the context requires otherwise, as references to their formation or existence at 20°C.

Hexagonal gels (M-phase) have been referred to in the prior art as cleaning compositions, e.g. GB 2 179 055, EP 1 153 837 and colloidal gels formed with gelling agents such as synthetic polymers or gelatin have also been suggested, e.g. US 4 465 663.

However these compositions cannot be readily dissolved in water to form microemulsions. They are moreover usually opaque and of an unattractive appearance and often require the presence of solvents such as glycols which add to the cost and are environmentally undesirable.

The use of a type of ringing gel to suspend oil for cosmetic or pharmaceutical applications was described in US 4 026 818 but the formulation requires the presence of hydroxylic solvents and utilises a surfactant system which is unsuitable for shampoo applications. EP O 598 335 describes the use of various cubic phases including I_1 phases as laundry presporters and for other cleaning formulations. If does not suggest how such phases could be used to suspend oil or form microemulsions. Normally attempts to suspend oil in surfactant mesophases result in coarse droplets of oil being suspended in the aqueous phase of a structured surfactant.

Our invention provides a concentrated personal cleansing composition comprising at least 20% water, 10 to 40% total surfactant and 2 to 40% of a mineral, glyceride, terpene or silicone oil wherein said surfactant comprises (A) an oil soluble surfactant having an HLB of from 2 to 10 in a proportion of from 8:1 to 1:5 based on the weight of oil and (B) a hydrophilic surfactant having an HLB greater than 11, in a weight proportion of from 1:1 to 1:30 based on the weight of (A), said surfactant water and oil being present in proportions adapted to form an I_1 phase having an I_1/L_1 transition temperature greater than 25°C.

The surfactants are preferably selected to provide an L_1 phase over a comparatively broad surfactant concentration range e.g. more than ± 5% or greater, which range typically lies above 15% by weight total surfactant based on the weight of the composition e.g. between 20% and 40% by weight surfactant usually between 25% and 60%.

The surfactants are preferably selected to provide an L_1 phase which melts above 30°C e.g. above 35°C, most preferably above 40°C. Preferably the L_1 phase melts at a temperature substantially below 100°C, e.g. below 90°C, more preferably below 80°C, most preferably below 70°C, especially below 60°C, typically below 55°C, usually below 50°C.

The surfactant mixture preferably has a mean HLB based on the molar proportions of the components between 10 and 15 e.g. 11 to 14. The surfactants preferably comprise non-ionic surfactants such as ethoxylated alcohols. It has been found that highly ethoxylated fatty alcohols, e.g. more than 10 EO groups, preferably more than 15 EO groups, especially 18 to 50 EO groups form L_1 phases particularly readily.

Other non-ionic surfactants which may be present include:-

alkyl phenol ethoxylates, fatty acid ethoxylates, fatty acid monoalkylolamide ethoxylates, fatty alcohol propoxylates, fatty amine alkoxylates and fatty acid glyceryl ester ethoxylates. Other non-ionic compounds suitable for inclusion in compositions of the present invention include mixed ethylene oxide propylene oxide alkoxylates, low relative molecular mass polyethylene glycols e.g. PEG600 and PEG200, ethylene glycol monoesters, amine oxides and alkyl polyglycosides, alkyl sugar esters including alkyl sucrose esters and alkyl oligosaccharide ester, alkyl capped polyvinyl alcohol and alkyl capped polyvinyl pyrrolidone.

Compositions of the invention may also comprise anionic surfactants, in addition to or instead of non-ionic surfactants. Anionic surfactant may comprise a C_{10-20} alkyl benzene sulphonate or an alkyl ether sulphate which is preferably the product obtained by ethoxylating a natural fatty or synthetic C_{10-20} e.g. a C_{12-15} alcohol with from 1 to 20, preferably 2 to 10 e.g. 3 to 4 ethyleneoxy groups, optionally stripping any unreacted alcohol, reacting the ethoxylated product with a sulphating agent and neutralising the resulting alkyl ether sulphuric acid with a base. The term also includes alkyl glyceryl sulphates, and random or block copolymerised alkyl ethoxy/propoxy sulphates.

The anionic surfactant may also comprise, for example, C_{10-20} e.g. C_{12-18} alkyl sulphate.

The surfactant may comprise a C_{8-20} e.g. C_{10-18} aliphatic soap. The soap may be saturated or unsaturated, straight or branched chain.

Preferred examples include dodecanoates, myristates, stearates, oleates, linoleates, linoleates and palmitates and coconut and tallow soaps.

The surfactant may include other anionic surfactants, such as olefin sulphonates, paraffin sulphonates, taurides, isethionates, ether sulphonates, ether carboxylates, aliphatic ester sulphonates e.g. alkyl glyceryl sulphonates, sulphosuccinates or sulphosuccinamates.

The cation of any anionic surfactant is typically sodium but may alternatively be potassium, lithium, calcium, magnesium, ammonium, or an alkyl ammonium having up to 6 aliphatic carbon atoms including isopropyl ammonium, monoethanol ammonium, diethanol ammonium, and triethanol ammonium.

Ammonium and ethanol ammonium salts are generally more soluble than the sodium salts. Mixtures of the above cations may be used.

The composition may contain amphoteric surfactants such as betaines sulphobetaines, amido betaines or imidazoline betaines.

The L_1 phase may be conveniently prepared by mixing the oil and oil soluble surfactant and adding sufficient water to the water soluble surfactant to maintain a lamellar phase. The oil and oil soluble surfactant may be stirred into the lamellar composition at elevated temperature, above the melting point of the desired L_1 phase. The composition is then diluted with hot water until a microemulsion is formed and then cooled to solidify it into the L_1 phase.

The oil is preferably a mineral oil (e.g. a low molecular weight petroleum ether) or a fatty glyceride, a terpene oil such as limonene or a silicone oil. Mixtures of oils may be used. Particularly preferred are vegetable oils such as coconut, evening primrose, groundnut, meadow foam, apricot kernel, peach kernel, avocado, jojoba and olive oil. Oil soluble cosmetic or topical pharmaceutical ingredients may be dissolve in the oil including antiseptics, styptics, antidandruff agents such as zinc omadine (zinc pyrithione) and selenium disulphide, proteins, emollients such as lanolin, isopropyl myristate, glyceryl isostearate or propylene glycol distearate, dyes, perfumes and waxes. Water insoluble particulate solids including exfoliants such as talc, clays, polymer beads, sawdust, silica, seeds, ground nutshells and dicalcium phosphate, pearlisers such as mica or glycerol or ethylene glycol mono- or di-stearate, glitter additives and sunscreens such as titanium dioxide may be dispersed in the hot microemulsion prior to cooling. Porous particles (so called micro-sponges) containing absorbed active ingredients or gelatin or other microcapsules may be suspended. Other active ingredients which may be suspended include insect repellants and topical pharmaceutical preparations, e.g. preparations for treatment of acne, fungicides for athlete's foot or ringworm or antiseptics or antihistamines. Pigments, such as the iron oxides, may also be added.

Electrolytes tend to break L_α phase structure and are preferably present in concentrations below 10% based on total weight of the compositions, more preferably below 5%, e.g. 0 to 3%, most preferably 0 to 1%. Generally we prefer that electrolyte be substantially absent. Adventitious chloride or sulphate present as impurities in the surfactant can be tolerated. Small amounts of builder such as citrates, pyrophosphates, polyphosphates may optionally be included.

Water soluble solvents are generally undesirable and are not required to form stable L_α structures according to the invention. We therefore prefer that they should be substantially absent. Although small amounts of, for example, ethanol or propanol may sometimes be desired for special purposes, they are preferably present in amounts less than 5% by weight, more preferably less than 3% by weight, most preferably less than 2% by weight, e.g. less than 1% by weight.

The composition may optionally contain hydrotropes such as sodium lower alkyl benzene sulphonate e.g. sodium toluene, xylene or cumene sulphonate or urea, however these are not generally necessary and are not generally preferred. We prefer that these should be present in quantities less than 5% by weight, more preferably less than 4%, especially less than 2% e.g. 0 to 1%. They may be useful occasionally to avoid haziness of the gel.

The total amount of water is preferably from 25 to 60% by weight of the composition, more preferably 30 to 50%, e.g. 35 to 50%. The total weight percentage of surfactant based on the weight of the composition is preferably from 15 to 35%, e.g. 20 to 30%. The proportion of oil is preferably greater than 5%, more preferably greater than 8%, e.g. 10 to 30%, especially 15 to 25% by weight based on the weight of the composition. The oil soluble surfactant is preferably present in a proportion of more than 1:5 based on the weight of oil, more preferably from 1:2 to 5:1. The oil soluble surfactant preferably has an HLB of from 3 to 9 e.g. 4 to 8.

The weight ratio of water soluble surfactant to oil soluble surfactant is preferably 1:1 to 30:1, more preferably 2:1 to 20:1, typically 3:1 to 15:1, e.g. 4:1 to 10:1. The water soluble surfactant preferably has an HLB greater than 12, more preferably greater than 13, especially 14 to 19.

The product may be cast into shaped bodies or formed into particles or granules, e.g. by spray cooling a hot solution of the L_1 phase formed on melting the composition.

The composition may be converted into a microemulsion phase by addition of water, by heating above the melting point or by adding electrolyte such as salt and the invention includes L_1 phases when so prepared.

The invention will be illustrated by the following examples:

Example 1

The following ingredients were mixed at 60°C and cooled to form a ringing gel:

Component	Solids (%)	w/w (%)
MINERAL OIL (100%)	20	20
"EMPICOL"® 0251/70J (70%)	11.2	16
"EMPIGEN"® BB (30%)	4.8	16
"GLUCAPON"® 215 CS UP (55%)	5	9.2
"EMPILAN"® KB2 (100%)	7.5	7.5
SODIUM CHLORIDE (100%)	2	2
PERFUME (100%)	0.5	0.5
ETHYLENE DIAMINE TETRACETIC ACID (100%)	0.1	0.1
CITRIC ACID (100%)	0.2	0.2
BENZOIC ACID (100%)	0.3	0.3
SODIUM HYDROXIDE (47%)	0.1	0.2
WATER	---	Balance

The method of mixing comprised the following steps:-

1. Charge 50% of water
2. Heat to 60°C
3. Add EDTA, sodium benzoate, citric acid and 47% NaOH dissolve with stirring
4. Add "EMPIGEN" BB
5. Add mineral oil and disperse with stirring
6. Add "EMPILAN" KB 2 and mix thoroughly
7. Add "EMPICOL" 0251/70j
8. Add remaining water
9. Add "GLUCAPON" 215 CS UP
10. Add further KB 2 until clear
11. Cool
12. Add evaporated water
13. Adjust pH

Physical Data

pH (10%)	: 5.5 ± 0.1	Density @ 20°C	: 1.0 ± 0.1 g cm^{-3}
Solids (%)	: ~ 53% (typical)	Appearance	: Clear or Hazy Gel
Odour	: Characteristic	Set Point (typical)	: 30°C
Viscosity @ 20°C	: N/A		

The product was examined by x-ray diffraction and exhibited peaks at 13.145nm (intense and sharp), 7.943nm (ill defined) and 6.355nm (small), indicating cubic symmetry, and formed a clear microemulsion on dilution or heating. The latter gave good even distribution of oil applied to skin.

Example 2

The following ingredients were mixed at 60°C and cooled to form a ringing gel:

Component	Solids (%)	w/w (%)
MINERAL OIL (100%)	15	15
"EMPICOL"® CDL30J/35 (22%)	8	35.4
"EMPIGEN"® BB (30%)	8	26.7
"EMPICOL"® 0785 (40%)	2	5
"EMPILAN"® KB3 (100%)	6	6
"EMPILAN"® KB6 (100%)	6	6
CITRIC ACID (100%)	0.5	0.5
PERFUME (100%)	0.2	0.2
ETHYLENE DIAMINE TETRACETIC ACID (100%)	0.2	0.2
"KATHON"®	---	0.2
WATER	---	Balance
TOTAL	45.8	100

Physical Data

Appearance	: Clear Liquid/Gel	Odour	: Characteristic Odour
Solids	: 36.5% (typical)	pH (100%)	: 5.5 - 6.5 (typical
Odour	: Characteristic	Set Point	: 20 ± 5°C

Viscosity (Carrimed Rheometer @ 20°C : N/A

The product had small angle x-ray diffraction peaks characteristic of cubic symmetry and formed a clear microemulsion on dilution with water or warming. The latter gave good even deposition of oil on skin.

Examples 3 and 4

The following ingredients were mixed at 60°C and cooled to form ringing gels:

Component	1		2	
	Solids (%)	w/w (%)	Solids (%)	w/w (%)
"EMPIGEN"® CDL30J/35 (22%)	8	36.4	8	36.4
"EMPIGEN"® BB (30%)	8	26.7	8	26.7
"EMPICOL"® LB40 (40%)	4	7.5	3	7.5
"EMPICOL"® CVH (90%)	4	4	---	---
"EMPILAN"® KB2 (100%)	5.5	5.5	6	6
TRIETHANOLAMINE (100%)	1.1	1.1	---	---
CITRIC ACID	1	0.75	0.75	0.75
ETHYLENE DIAMINE TETRACETIC ACID	0.05	0.05	0.05	0.05
"KATHON"® CG (100%)	0.05	0.05	0.05	0.05
LIGHT MINERAL (100%)	14	14	20	20
WATER	---	Balance	---	Balance
TOTAL	**45.7**	**100**	**46.1**	**100**
Appearance	Clear Gel		Clear Gel	

The products in each case exhibited cubic symmetry and formed clear microemulsions on dilution with water or heating. The registered trade marks noted above have the following significance:-

"EMPICOL" CVH is a C_6 alkyl ether carboxylic acid

"EMPICOL" LB40 is a C_8 C_{10} alkyl sulphate

"EMPICOL" 0251/70J is a C_{12-14} alkyl 3 mole ethoxy sulphate

"EMPICOL" 9758 is a C_{10} alkyl sulphate

"EMPIGEN" BB is a C_{12-14} alkyl betaine

"EMPIGEN" CDL is coconut ampho acetate

"EMPILAN" KB2 is a C_{12-14} alkyl 2 mole ethoxylate

"EMPILAN" KB6 is a C_{12-14} alkyl 6 mole ethoxylate

"GLUCAPON" 215CS is a C_{8-10} alkyl polyglucoside D.P. 1.5

"KATHON" CG is a proprietary biocide

Exhibit 2

Johnson & Johnson

OFFICE OF
GENERAL COUNSEL

ONE JOHNSON & JOHNSON PLAZA
NEW BRUNSWICK, N.J. 08933-7002

8 June 2000

URGENT VIA FACSIMILE 9-011-121-420-5437

Mr. Roger Savidge
Albright & Wilson Surfactants, Europe
201-222 Hagley Road
Oldbury West Midlands B68 ONN
England

Re: PCT Patent Application Based upon UK provisional
Patent Application No. 9913408.2 filed 10 June 1999
For Ringing Gel Technology

Dear Roger:

As we discussed this morning, please file a Request for the above referenced application on 9 June 2000 and designate all member countries. If necessary, you may file the attached Appointment with the Request. After this application is filed, we can then select a mutually acceptable independent counsel for prosecuting this application.

We agree that the PCT application should be filed in the names of Rhodia Consumer Specialties Limited trading as Albright & Wilson Surfactants Europe and *Johnson & Johnson Consumer Companies, Inc.*, having an address at *Grandview Road, Skillman, New Jersey 08558 USA.* It is our understanding that the following individuals shall be included as inventors to this application:

1) Elvin Lukenbach
160 Klinesville Road
Flemington, New Jersey 08822
USA
United States Citizen

2) Laura McCulloch
18 Hampton Court
Basking Ridge, New Jersey
USA
United Kingdom Citizen

3) Benjamin Wiegand
2028 Farmview Drive
Newton, Pennsylvania 18940
USA
United States Citizen

In view of the fact that I will be away from the office on the 9th, please contact my assistant, Emilie Liberatore at 732 524-2820 should you need further assistance. Thank you so much for your assistance in this matter.

Very truly yours,

Michele G. Mangini

APPOINTMENT OF REPRESENTATIVE FOR INTERNATIONAL APPLICATION

PRIORITY APPLICATION NUMBER: GB 9913408.2

PRIORTY DATE CLAIMED: 10 June 1999

TITLE OF INVENTION: PERSONAL CARE FORMULATIONS

APPLICANTS: JOHNSON & JOHNSON CONSUMER COMPANIES, INC. AND RHODIA CONSUMER SPECIALTIES LIMITED TRADING AS ALBRIGHT & WILSON SURFACTANTS EUROPE

The undersigned applicant hereby appoints

Mr. Roger Savidge
of Rhodia Consumer Specialties Limited
trading as Albright & Wilson Surfactants Europe
201-222 Hagley Road
Oldbury West Midlands B68 ONN
England

To act on their behalf before the competent International Authorities in connection with this international application and to receive payments on their behalf.

New Brunswick, NJ USA
New Brunswick, NJ USA

8 June 2000
8 June 2000

Johnson & Johnson Consumer Companies, Inc.
By: Michele Galka Mangini
Assistant Secretary

Exhibit 3

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference *(if desired) (12 characters maximum)* MPD315/PCT/RGMS

Box No. I TITLE OF INVENTION

PERSONAL CARE FORMULATIONS

Box No. II APPLICANT

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

RHODIA CONSUMER SPECIALTIES LIMITED TRADING AS ALBRIGHT & WILSON SURFACTANTS EUROPE AND JOHNSON & JOHNSON CONSUMER COMPANIES INC
210-222 HALGEY ROAD WEST
OLDBURY, WEST MIDLANDS, B68 ONN
GREAT BRITAIN

☐ This person is also inventor.

Telephone No. +44 121 420 5430

Facsimile No. +44 121 420 5437

Teleprinter No. 336291 ALBRIW G

State *(that is, country)* of nationality: GB

State *(that is, country)* of residence: GB

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

HATCHMAN Kevan
5 Byland Close
Friarscroft
Bromsgrove
Worcestershire, B61 7PL GREAT BRITAIN

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only *(If this check-box is marked, do not fill in below.)*

State *(that is, country)* of nationality: GB

State *(that is, country)* of residence: GB

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: ☒ agent ☐ common representative

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

SAVIDGE Roger Gordon Madgwick
Rhodia Consumer Specialties Limited
210-222 Hagley Road West
Oldbury, West Midlands
B68 0NN
GREAT BRITAIN

Telephone No. +44 121 420 5430

Facsimile No. +44 121 420 5437

Teleprinter No. 336291 ALBRIW G

☐ **Address for correspondence:** Mark this check-box where no agent or common representative is has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

If none of the following sub-boxes is used, this sheet should not be included in the request.

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

LUKENBACH Elvin
160 Kinesville Road
Flemington, New Jersey 08822
UNITED STATES OF AMERICA

This person is:
- [ ] applicant only
- [X] applicant and inventor
- [ ] inventor only *(If this check-box is marked, do not fill in below.)*

State *(that is, country)* of nationality: US

State *(that is, country)* of residence: US

This person is applicant for the purposes of:
- [ ] all designated States
- [ ] all designated States except the United States of America
- [X] the United States of America only
- [ ] the States indicated in the Supplemental Box

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

MCCULLOCH Laura
18 Hampton Court
Basking Ridge, New Jersey
UNITED STATES OF AMERICA

This person is:
- [ ] applicant only
- [X] applicant and inventor
- [ ] inventor only *(If this check-box is marked, do not fill in below.)*

State *(that is, country)* of nationality: GB

State *(that is, country)* of residence: US

This person is applicant for the purposes of:
- [ ] all designated States
- [ ] all designated States except the United States of America
- [X] the United States of America only
- [ ] the States indicated in the Supplemental Box

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

WIEGAND Benjamin
2028 Farmview Drive
Newton, Pennsylvania 18940
UNITED STATES OF AMERICA

This person is:
- [ ] applicant only
- [X] applicant and inventor
- [ ] inventor only *(If this check-box is marked, do not fill in below.)*

State *(that is, country)* of nationality: US

State *(that is, country)* of residence: US

This person is applicant for the purposes of:
- [ ] all designated States
- [ ] all designated States except the United States of America
- [X] the United States of America only
- [ ] the States indicated in the Supplemental Box

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

This person is:
- [ ] applicant only
- [ ] applicant and inventor
- [ ] inventor only *(If this check-box is marked, do not fill in below.)*

State *(that is, country)* of nationality:

State *(that is, country)* of residence:

This person is applicant for the purposes of:
- [ ] all designated States
- [ ] all designated States except the United States of America
- [ ] the United States of America only
- [ ] the States indicated in the Supplemental Box

- [ ] Further applicants and/or (further) inventors are indicated on another continuation sheet.

Box No. V DESIGNATION OF STATES

The following designations are he: made under Rule 4.9(a) *(mark the applicable check-s; at least one must be marked)*:

Regional Patent

☐ AP ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT

☒ EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT

☒ EP European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a C ntracting State of the European Patent Convention and of the PCT

☒ OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT *(if other kind of protection or treatment desired, specify on dotted line)* .....

National Patent *(if other kind of protection or treatment desired, specify on dotted line)*:

☒ AE	United Arab Emirates	☒ LR	Liberia
☒ AL	Albania	☒ LS	Lesotho
☒ AM	Armenia	☒ LT	Lithuania
☒ AT	Austria	☒ LU	Luxembourg
☒ AU	Australia	☒ LV	Latvia
☒ AZ	Azerbaijan	☒ MA	Morocco
☒ BA	Bosnia and Herzegovina	☒ MD	Republic of Moldova
☒ BB	Barbados	☒ MG	Madagascar
☒ BG	Bulgaria	☒ MK	The former Yugoslav Republic of Macedonia
☒ BR	Brazil		
☒ BY	Belarus	☒ MN	Mongolia
☒ CA	Canada	☒ MW	Malawi
☒ CH	and LI Switzerland and Liechtenstein	☒ MX	Mexico
☒ CN	China	☒ NO	Norway
☒ CR	Costa Rica	☒ NZ	New Zealand
☒ CU	Cuba	☒ PL	Poland
☒ CZ	Czech Republic	☒ PT	Portugal
☒ DE	Germany	☒ RO	Romania
☒ DK	Denmark	☒ RU	Russian Federation
☒ DM	Dominica	☒ SD	Sudan
☒ EE	Estonia	☒ SE	Sweden
☒ ES	Spain	☒ SG	Singapore
☒ FI	Finland	☒ SI	Slovenia
☒ GB	United Kingdom	☒ SK	Slovakia
☒ GD	Grenada	☒ SL	Sierra Leone
☒ GE	Georgia	☒ TJ	Tajikistan
☒ GH	Ghana	☒ TM	Turkmenistan
☒ GM	Gambia	☒ TR	Turkey
☒ HR	Croatia	☒ TT	Trinidad and Tobago
☒ HU	Hungary	☒ TZ	United Republic of Tanzania
☒ ID	Indonesia	☒ UA	Ukraine
☒ IL	Israel	☒ UG	Uganda
☒ IN	India	☒ US	United States of America
☒ IS	Iceland		
☒ JP	Japan	☒ UZ	Uzbekistan
☒ KE	Kenya	☒ VN	Viet Nam
☒ KG	Kyrgyzstan	☒ YU	Yugoslavia
☒ KP	Democratic People's Republic of Korea	☒ ZA	South Africa
		☒ ZW	Zimbabwe
☒ KR	Republic of Korea	Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet:	
☒ KZ	Kazakhstan		
☒ LC	Saint Lucia	☐	.AG . . ANTIGUA. & .BARBUDA
☒ LK	Sri Lanka	☐	.DZ . . . ALGERIA.

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. *(Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)*

Supplemental Box *If the Supplemental Box is not used, this sheet should not be included in the request.*

*If, in any of the Boxes, **the space is insufficient** to furnish all the information: in such case, write "Continuation of Box No. ..." [indicate the number of the Box] and furnish the information in the same manner as required according to the captions of the Box in which the space was insufficient. In particular:*

*(i) **if more than two persons are involved as applicants and/or inventors** and no "continuation sheet" is available: in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box No. III. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below;*

*(ii) if, in Box No. II or in any of the sub-boxes of Box No. III, the indication **"the States indicated in the Supplemental Box"** is checked: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the applicant(s) involved and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is applicant;*

*(iii) if, in Box No. II or in any of the sub-boxes of Box No. III, **the inventor or the inventor/applicant is not inventor for the purposes of all designated States or for the purposes of the United States of America**: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the inventor(s) and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is inventor;*

*(iv) if, in addition to the agent(s) indicated in Box No. IV, there are **further agents**: in such case, write "Continuation of Box No. IV" and indicate for each further agent the same type of information as required in Box No. IV;*

*(v) if, in Box No. V, the name of any State (or OAPI) is accompanied by the indication "**patent of addition**," or "**certificate of addition**," or if, in Box No. V, the name of the United States of America is accompanied by an indication "**continuation**" or "**continuation-in-part**": in such case, write "Continuation of Box No. V" and the name of each State involved (or OAPI), and after the name of each such State (or OAPI), the number of the parent title or parent application and the date of grant of the parent title or filing of the parent application;*

*(vi) if, in Box No. VI, there are **more than three earlier applications whose priority is claimed**: in such case, write "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI;*

*(vii) if, in Box No. VI, **the earlier application is an ARIPO application**: in such case, write "Continuation of Box No. VI", specify the number of the item corresponding to that earlier application and indicate at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed.*

*2. If, with regard to the **precautionary designation statement** contained in Box No. V, the applicant wishes to exclude any State(s) from the scope of that statement: in such case, write "Designation(s) excluded from precautionary designation statement" and indicate the name or two-letter code of each State so excluded.*

*3. If the applicant claims, in respect of any designated Office, the benefits of provisions of the national law concerning **non-prejudicial disclosures or exceptions to lack of novelty**: in such case, write "Statement concerning non-prejudicial disclosures or exceptions to lack of novelty" and furnish that statement below.*

CONTINUATION OF BOX NO. V

Designations (continued)

x MZ MOZAMBIQUE

Box No. VI PRIORITY CLAIM ☐ Further priority claims are indicated in the Supplemental Box.

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is: national application: country	regional application:* regional Office	international application: receiving Office
item (1) 10 JUNE 1999	9913308.2	GB		
item (2)				
item (3)				

☐ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) *(only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office)* identified above as item(s): _____

* *Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.*

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) *(if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used)* : ISA / EP

Request to use results of earlier search; reference to that search *(if an earlier search has been carried out by or requested from the International Searching Authority)*: Date *(day/month/year)* Number Country *(or regional Office)*

Box No. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following **number of sheets**:

request	:	5
description (excluding sequence listing part)	:	25
claims	:	1
abstract	:	1
drawings	:	
sequence listing part of description	:	
Total number of sheets	:	32

This international application is **accompanied by** the item(s) marked below:

1. ☒ fee calculation sheet
2. ☐ separate signed power of attorney TO FOLLOW
3. ☒ copy of general power of attorney; reference number, if any: & copy of General Power of Signatory.
4. ☐ statement explaining lack of signature
5. ☐ priority document(s) identified in Box No. VI as item(s): TO FOLLOW
6. ☐ translation of international application into (language):
7. ☐ separate indications concerning deposited microorganism or other biological material
8. ☐ nucleotide and/or amino acid sequence listing in computer readable form
9. ☒ other *(specify)*: Change of Name Certificate

Figure of the drawings which should accompany the abstract: N/A

Language of filing of the international application: ENGLISH

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

for and on behalf of Rhodia Consumer Specialties Limited
trading as Albright & Wilson Surfactants Europe
and Johnson & Johnson Consumer Comapnies Inc

ROGER GORDON MADGWICK SAVIDGE - By Power of Attorney

For receiving Office use only

1. Date of actual receipt of the purported international application:
2. Drawings: ☐ received: ☐ not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:
4. Date of timely receipt of the required corrections under PCT Article 11(2):
5. International Searching Authority (if two or more are competent): ISA /
6. ☐ Transmittal of search copy delayed until search fee is paid.

For International Bureau use only

Date of receipt of the record copy by the International Bureau:

This sheet is not part of and does not count as a sheet of the international application.

PCT

FEE CALCULATION SHEET

Annex to the Request

For receiving Office use only

International application No.

Date stamp of the receiving Office

Applicant's or agent's file reference: MPD315/PCT/RGMS

Applicant: RHODIA CONSUMER SPECIALTIES LIMITED TRADING AS ALBRIGHT & WILSON SURFACTANTS EUROPE AND JOHNSON & JOHNSON CONSUMER COMPANIES INC

CALCULATION OF PRESCRIBED FEES

1. TRANSMITTAL FEE . . . . . DEM 199.49 [T]

2. SEARCH FEE . . . . . DEM 1848.26 [S]

International search to be carried out by _____

(If two or more International Searching Authorities are competent in relation to the international application, indicate the name of the Authority which is chosen to carry out the international search.)

3. INTERNATIONAL FEE

Basic Fee

The international application contains 32 sheets.

first 30 sheets . . . . . DEM 806.51 [b1]

2 remaining sheets x 19.95 additional amount = DEM 39.90 [b2]

Add amounts entered at b1 and b2 and enter total at B . . . . DEM 846.41 [B]

Designation Fees ALL STATES DESIGNATED

The international application contains _____ designations.

8 number of designation fees payable *(maximum 10)* x DEM 148.64 amount of designation fee = DEM 1189.12 [D]

Add amounts entered at B and D and enter total at I . . . . . DEM 2035.53 [I]

(Applicants from certain States are entitled to a reduction of 75% of the international fee. Where the applicant is (or all applicants are) so entitled, the total to be entered at I is 25% of the sum of the amounts entered at B and D.)

4. FEE FOR PRIORITY DOCUMENT *(if applicable)* . . . . . [P]

5. TOTAL FEES PAYABLE . . . . . DEM 4083.28 TOTAL

Add amounts entered at T, S, I and P, and enter total in the TOTAL box

[ ] The designation fees are not paid at this time.

MODE OF PAYMENT

[X] authorization to charge deposit account (see below)	[ ] bank draft	[ ] coupons
[ ] cheque	[ ] cash	[ ] other *(specify)*:
[ ] postal money order	[ ] revenue stamps	

DEPOSIT ACCOUNT AUTHORIZATION *(this mode of payment may not be available at all receiving Offices)*

The RO EP

[X] is hereby authorized to charge the total fees indicated above to my deposit account.

[X] *(this check-box may be marked only if the conditions for deposit accounts of the receiving Office so permit)* is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.

[ ] is hereby authorized to charge the fee for preparation and transmittal of the priority document to the International Bureau of WIPO to my deposit account.

28 05 00 09 — Deposit Account No.

9 JUNE 2000 — Date *(day month year)*

(GA235) Signature Roger Gordon Madgwick SAVIDGE

See Notes to the fee calculation sheet

APPOINTMENT OF REPRESENTATIVE FOR INTERNATIONAL APPLICATION

PRIORITY APPLICATION NUMBER: GB 9913408.2

PRIORTY DATE CLAIMED: 10 June 1999

TITLE OF INVENTION: PERSONAL CARE FORMULATIONS

APPLICANTS: JOHNSON & JOHNSON CONSUMER COMPANIES, INC. AND RHODIA CONSUMER SPECIALTIES LIMITED TRADING AS ALBRIGHT & WILSON SURFACTANTS EUROPE

The undersigned applicant hereby appoints

Mr. Roger Savidge
of Rhodia Consumer Specialties Limited
trading as Albright & Wilson Surfactants Europe
201-222 Hagley Road
Oldbury West Midlands B68 ONN
England

To act on their behalf before the competent International Authorities in connection with this international application and to receive payments on their behalf.

New Brunswick, NJ USA
New Brunswick, NJ USA

8 June 2000
8 June 2000

Johnson & Johnson Consumer Companies, Inc.
By: Michele Gaika Mangini
Assistant Secretary

BY THIS POWER OF ATTORNEY given this 20 day of April two thousand, **RHODIA CONSUMER SPECIALTIES LIMITED**, a Company duly incorporated in England and having its Registered Office at 210-222 Hagley Road West, Oldbury, West Midlands (hereinafter called "the Company") hereby appoints **ROGER GORDON MADGWICK SAVIDGE** (hereinafter called "the Attorney") to be the true and lawful Agent and Attorney of the Company on behalf of and in the name of the Company or otherwise to do, perform, exercise and execute or concur with any other person or persons in doing, performing, exercising and executing in any country or countries or jurisdiction in any part of the world all or any other the following powers, acts, deeds and things, that is to say:-

1. To make application or to cause application to be made for the grant to the Company of any letters patents, trade mark, trade name or design and the proper registration thereof and to take all steps necessary for the same to be prosecuted and maintained;

2. As the act and deed of the Company to sign, seal, deliver and execute all or any assignments or assurances to the Company of any letters patent, registered trade mark, trade name or registered design or any application therefore for the purpose of fully and effectually vesting and transferring the same into the name of the Company;

3. As the act and deed of the Company to sign, seal, deliver and execute all or any assignments, assurances, licences or sub-licences from the Company of or under any letters patent, registered trade mark, trade name or registered design or any application therefor for the purpose of fully and effectually vesting, transferring or granting the same into the name of a company (whether in the United Kingdom or elsewhere) which is a subsidiary or holding company of the Company insofar as such documents can be executed without the Company's Seal being affixed thereto;

4. To sign and execute all documents relating to applications for letters patent, registered trade marks, trade names or registered design or the renewal thereof or to assignments or assurances of letters patent or applications therefor;

5. To act in regard to all official communications which may now or hereafter be addressed to the Attorney relating to applications for letters patents, registered trade marks, trade names or registered designs or the renewal thereof in such manner that the Attorney may be recognised as the authorised Agent of the Company in all proceedings incident thereto;

6. For or in connection with any letters patent, registered trade mark, trade name or registered design or application therefor to sign, seal, deliver and execute any Power or Attorney or other deed or document;

   a) authorising any firm of patent agents or trade mark agents in the United Kingdom of Great Britain and Northern Ireland to act on behalf of the Company;

   b) authorising any person, persons, firm or company practising as patent agents or trade mark agents or otherwise entitled to act as agents for all matters relating to trade marks or trade names outside the United Kingdom of Great Britain and Northern Ireland to act on behalf of the Company;

7. To initiate or cause to be initiated in any Patent Office or Registry or any Trade Mark Registry or other official agency or government department or otherwise responsible for the registration or protection of trade marks, trade names or designs any proceedings or application whatsoever relating to any proprietary rights whether in the name of the Company or not and to cause such proceedings or application to be maintained or withdrawn;

AND THE COMPANY HEREBY RATIFIED AND CONFIRMS and agrees to ratify and confirm all and whatsoever the Attorney shall lawfully do or have done by virtue of the authorities herein contained.

IN WITNESS WHEREOF the Company has executed this document as a deed the day and year first above written.

Executed by **RHODIA CONSUMER SPECIALTIES LIMITED** as a deed and signed by:

Director .....

Secretary .....

PCT

GENERAL POWER OF ATTORNEY

(for several international applications filed under the Patent Cooperation Treaty)

(PCT Rule 90.5)

The undersigned person(s):
(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

ALBRIGHT & WILSON UK LIMITED
P O BOX 3
210-222 HAGLEY ROAD WEST
OLDBURY
WARLEY
WEST MIDLANDS B68 0NN
ENGLAND

hereby appoint(s) the following person(s) as: [X] agent(s) [ ] common representative

Name and address
(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

1. SAVIDGE, Roger Gordon Madgwick

2. KINTON, Colin David

both of
ALBRIGHT & WILSON UK LIMITED
PATENTS DEPARTMENT
P O BOX 3
210-222 HAGLEY ROAD WEST, OLDBURY, WARLEY, WEST MIDLANDS B68 0NN, ENGLAND

to represent the undersigned before

[X] all the competent International Authorities
[ ] the International Searching Authority only
[ ] the International Preliminary Examining Authority only

in connection with any and all international applications filed by the undersigned with the following Office

EUROPEAN PATENT OFFICE as receiving Office

and to make or receive payments on behalf of the undersigned.

Signature(s) *(where there are several persons, each of them must sign; next to each signature, indicate the name of the person signing and the capacity in which the person signs, if such capacity is not obvious from reading this power)*:

for and on behalf of
ALBRIGHT & WILSON UK LIMITED

A P CREE, Company Secretary

Date: 27 February 1995

Form PCT/Model of general power of attorney (for several international applications) (July 1992)

CERTIFICATE OF INCORPORATION

ON CHANGE OF NAME

Company No. 36833

The Registrar of Companies for England and Wales hereby certifies that

ALBRIGHT & WILSON UK LIMITED

having by special resolution changed its name, is now incorporated under the name of

RHODIA CONSUMER SPECIALTIES LIMITED

Given at Companies House, London, the 10th March 2000

MR J MAYNE

For The Registrar Of Companies

COMPANIES HOUSE

Sent to EPO
9/1/200

MPD315/PCT

PATENT COOPERATIONA TREATY

FINAL SPECIFICATION
(Description, Abstract and Claims)

Applicant : RHODIA CONSUMER SPECIALTIES LIMITED
TRADING AS ALBRIGHT & WILSON
SURFACTANTS EUROPE
-AND-
JOHNSON & JOHNSON
CONSUMER COMPANIES INC

Inventors : KEVAN HATCHMAN
ELVIN LUKENBACH
LAURA MCCULLOCH
BENJAMIN WIEGAND

ABSTRACT

Personal care compositions contain at least 20% water, 10 to 40% total surfactant and 2 to 40% of oil, such as a mineral, fatty ester, glyceride, terpene or silicone oil wherein said surfactant comprises (a) an oil soluble surfactant having an HLB of from 2 to 10 in a proportion of from 8:1 to 1:5 based on the weight of oil and (b) a hydrophilic surfactant having an HLB greater than 11 in a weight proportion of from 1:1 to 1:30 based on the weight of (a), said water surfactant and oil being present in proportions adapted to form an I_1 phase having an I_1/L_1 transition temperature greater than 25°C.

MPD315/PCT

PERSONAL CARE FORMULATIONS

The present invention relates to shampoo or cleaning compositions suitable for personal care applications in the form of I_1 mesophase systems containing dispersed oil.

Dispersing oil in aqueous shampoo and body wash formulations has presented problems. To prevent the oil phase separating it must either be: (A) emulsified which involves dispersing the oil as colloidal single droplets; (B) microemulsified which involves forming a micellar solution with oil incorporated into surfactant micelles; (C) suspended in a structured surfactant system which typically comprises a dispersion of a surfactant mesophase in aqueous electrolyte; or (D) incorporated into a water soluble solid, pasty or gelatinous composition.

With the exception of microemulsions which are clear, thermodynamically stable, micellar solutions, the foregoing systems are necessarily opaque and contain the oil dispersed in a relatively coarse form, which does not deposit satisfactorily on skin or hair.

However microemulsions are difficult to formulate using the surfactants which are most effective in body wash and other personal care formulations and contain relatively low concentrations of surfactant.

We have now discovered that oil may be stably incorporated into the structure of an I_1 phase to form a clear gel-like composition which contains higher concentrations of surfactant and oil than conventional microemulsions, but which dissolves in water to form a microemulsion. The novel oil-in-I_1 compositions also form microemulsions on heating.

Surfactants are known to form mesophases or liquid crystal phases at concentrations above approximately 30% by weight based on the weight of water and surfactant. Mesophases are phases which exhibit a degree of order intermediate between typical liquids and solids. Generally mesophases combine long range order associated with crystals, with fast molecular motion common to liquids.

The formation of detergent mesophases is well documented. Different surfactants and surfactant mixtures differ widely in their ability to form the numerous different mesophases, and in respect of the conditions of concentration and temperature at which they are formed. For a typical surfactant of the type normally used in cleaning products the following mesophases are usually observed. The concentrations given are illustrative only and may vary considerably from one surfactant or surfactant mixture to the next.

Below approximately 30% surfactant an isotropic L_1 phase is formed (with micelles of surfactant in water). Above 30% surfactant many detergents form a M phase which is not normally used in personal care applications since it dos not show suitable flow characteristics and is difficult to dissolve or disperse in water. Above the concentrations required to form an M phase, but usually at concentrations of less than 80% active surfactant, i.e. 60%-80% a G-phase is formed. At concentrations higher than those required to form a G-phase, i.e. typically greater than 80% active surfactant, most surfactants form a hydrated solid, and some, especially non-ionic surfactants form a liquid phase containing dispersed micelle sized droplets of water - an inverted micellar solution known as an L_2 phase. L_2 detergent systems do not disperse readily in water and have a tendency to form undesirable gels, e.g. M phases, on dilution.

Some surfactants form viscous isotropic or VI phases. These are immobile phases usually with a vitreous appearance, and have been relatively little studied compared to the other phases discussed above. They have been virtually ignored in the context of formulating cleaning compositions because most of the surfactants and surfactant systems which are commonly used in cleaning compositions do not form VI phases, at least at

normal temperatures, or form them only within narrow concentration ranges and because their known properties as immobile gels has deterred formulators from investigating them. They are recognised as being the most viscous of the lyotropic mesophases.

The different surfactant phases can be recognised by a combination of appearance, rheology, textures under the microscope, electron microscopy and x-ray diffraction or neutron scattering. A detailed description, with illustrations, of the difference textures observable using a polarising microscope, is to be found in the paper by Rosevear JAOCS Vol 31, p628.

The following terms may require explanation or definition:

The "hydrophilic: lipophilic balance", or "HLB" value is used as a measure of the relative affinities of the surfactants for water and oil respectively and correlates with their effectiveness as emulsifiers. HLB value can easily be calculated for alcohol ethoxylates since it is one fifth of the weight percent of ethylene oxide based on the total mole weight. Other surfactants can be assigned equivalent values by applying more complicated formulae or by measuring their relative affinity for water and oil. An HLB value of 20 represents a completely water soluble oil insoluble surfactant, while an HLB value of 0 represents a completely oil soluble and water insoluble surfactant.

"Optically isotropic" surfactant phases do not normally tend to rotate the plane of polarisation of plane polarised light. If a drop of sample is placed between two sheets of optically plane polarising material whose planes are at right angles, and light is shone on to one sheet, optically isotropic surfactant samples do not appear substantially brighter than their surrounding when viewed through the other sheet. Optically anisotropic materials appear substantially brighter. Optically anisotropic mesophases typically show characteristic textures when viewed through a microscope between crossed polarisers, whereas optically isotropic phases usually show a featureless continuum.

"Newtonian liquids" have a viscosity which remains constant at different shear rates. For the purpose of this specification, liquids are considered Newtonian if the viscosity does not vary substantially at shear rates up to 1000 sec^{-1}.

"Lamellar" phases are phases which comprise a plurality of bilayers of surfactant arranged in parallel and separated by liquid medium. They include both solid phases and the typical form of the liquid crystal G-phase. G-phases are typically pourable, non-Newtonian, anisotropic products. They are typically viscous-looking, opalescent materials with a characteristic "smeary" appearance on flowing. They form characteristic texture under the polarising microscope and freeze fractured samples have a lamellar appearance under the electron microscope. X-ray diffraction or neutron scattering similarly reveal a lamellar structure, with a principal peak typically between 4 and 10nm, usually 5 to 6nm. Higher order peaks, when present occur at double or higher integral multiples of the Q value of the principal peak. Q is the momentum transfer vector and is related, in the case of lamellar phases, to the repeat spacing d by the equation $Q=\frac{2n}{d}$ [pi] where n is the order of the peak.

G-phases, however, can exist in several different forms, including domains of parallel sheets which constitute the bulk of the typical G-phases described above and spherulites formed from a number of concentric spheroidal shells, each of which is a bilayer of surfactant. In this specification the term "lamellar" will be reserved for compositions which are at least partly of the former type. Opaque compositions at least predominantly of the latter type in which the continuous phase is a substantially isotropic solution containing dispersed spherulites are referred to herein as "G-phase compositions". G-phases are sometimes referred to in the literature as $L_{(alpha)}$ phases.

L_1-phases are mobile, optically isotropic, and typically Newtonian liquids which show no texture under the polarising microscope. Electron microscopy is capable of resolving the texture of such phases only at very high magnifications, and X-ray or neutron scattering normally gives only a single broad peak typical of a liquid structure, at very small angles

close to the reference beam. The viscosity of an L_1-phase is usually low, but may rise significantly as the concentration approaches the upper phase boundary.

"M-phases" are typically immobile, anisotropic products resembling low melting point waxes. They give characteristic textures under the polarising microscope, and a hexagonal diffraction pattern by X-ray or neutron diffraction which comprises a major peak, usually at values corresponding to a repeat spacing between 4 and 10nm, and sometimes higher order peaks, the first at a Q-value which is $3^{0.5}$ times the Q-value of the principal peak and the next double the Q-value of the principal peak. M-phases are sometimes referred to in the literature as H-phases.

The viscous isotropic or "VI" phases are typically immobile, non-Newtonian, optically isotropic and are typically transparent, at least when pure. VI phases have a cubic symmetrical diffraction pattern, under X-ray diffraction or neutron scattering, with a principal peak and higher order peaks at $2^{0.5}$ and $3^{0.5}$ times the Q-value of the principal peak.

These cubic liquid crystalline phases are sometimes observed immediately following the micellar phase at ambient temperature as the concentration of surfactant is increased. It has been proposed that such VI phases, sometimes referred to as I_1 phase, may arise from the packing of micelles (probably spherical) in a cubic lattice. At ambient temperature a further increase in surfactant concentration usually results in hexagonal phase (M_1), which may be followed by a lamellar phase (G). I_1 phases, when they occur, are usually only observed over a narrow range of concentrations, typically just above those at which the L_1-phase is formed. The location of such VI phases in a phase diagram suggests that the phase is built up of small closed surfactant aggregates in a water continuum.

An inverse form of the I_1 phase (the I_2 phase) has also been reported, possibly between the inverse hexagonal (M_2) and L_2 phases. It consists of a surfactant continuum containing a cubic array of inverted micelles. An alternative form of the VI phase called

the V_1 phase has been observed at concentrations between the M and G phases and may comprise a bicontinuous system. This may exhibit an even higher viscosity than the I_1. An inverse phase, the V_2 phase, between the G and M_2 phases has also been postulated.

VI phases are typically examples of "ringing gels". When a jar or beaker containing such a phase is sharply struck, a distinctive vibration can be felt in the composition.

The I_1/L_1 transition temperature will be referred to herein as the melting point of the I_1 phase for convenience, although it is not strictly speaking the melting point since the VI phases are not solids.

All references herein to the formation or existence of specific phases or structures are to be construed, unless the context requires otherwise, as references to their formation or existence at 20°C.

Hexagonal gels (M-phase) have been referred to in the prior art as cleaning compositions, e.g. GB 2 179 055, EP I 153 837 and colloidal gels formed with gelling agents such as synthetic polymers or gelatin have also been suggested, e.g. US 4 465 663.

However these compositions cannot be readily dissolved in water to form microemulsions. They are moreover usually opaque and of an unattractive appearance and often require the presence of solvents such as glycols which add to the cost and are environmentally undesirable.

The use of a type of ringing gel to suspend oil for cosmetic or pharmaceutical applications was described in US 4 026 818 but the formulation requires the presence of hydroxylic solvents and utilises a surfactant system which is unsuitable for shampoo applications. EP O 598 335 describes the use of various cubic phases including I_1 phases as laundry prespotters and for other cleaning formulations. If does not suggest how such phases could be used to suspend oil or form microemulsions. Normally attempts to

suspend oil in surfactant mesophases result in coarse droplets of oil being suspended in the aqueous phase of a structured surfactant.

Our invention provides a concentrated personal cleansing composition comprising, by weight of the composition, at least 20% water, 10 to 40% total surfactant and 2 to 40% of oil, such as a mineral, fatty ester, glyceride, terpene or silicone oil wherein said surfactant comprises (A) an oil soluble surfactant having an HLB of from 2 to 10 in a proportion of from 8:1 to 1:5 based on the weight of oil and (B) a hydrophilic surfactant having an HLB greater than 11, in a weight proportion of from 1:1 to 1:30 based on the weight of (A), said surfactant water and oil being present in proportions adapted to form an I_1 phase having an I_1/L_1 transition temperature greater than 25°C.

The surfactants are preferably selected to provide an I_1 phase over a comparatively broad surfactant concentration range e.g. more than ± 5% or greater, which range typically lies above 15% by weight total surfactant based on the weight of the composition e.g. between 20% and 40% by weight surfactant usually between 25% and 60%.
The surfactants are preferably selected to provide an I_1 phase which melts above 30°C e.g. above 35°C, most preferably above 40°C. Preferably the I_1 phase melts at a temperature substantially below 100°C, e.g. below 90°C, more preferably below 80°C, most preferably below 70°C, especially below 60°C, typically below 55°C, usually below 50°C.

The surfactant mixture preferably has a mean HLB based on the molar proportions of the components between 10 and 15 e.g. 11 to 14. The surfactants preferably comprise non-ionic surfactants such as ethoxylated alcohols. It has been found that highly ethoxylated fatty alcohols, e.g. more than 10 EO groups, preferably more than 15 EO groups, especially 18 to 50 EO groups form I_1 phases particularly readily.

Other non-ionic surfactants which may be present include:-

alkyl phenol ethoxylates, fatty acid ethoxylates, fatty acid monoalkylolamide ethoxylates, fatty alcohol propoxylates, fatty anime alkoxylates and fatty acid glyceryl ester ethoxylates. Other non-ionic compounds suitable for inclusion in compositions of the present invention include mixed ethylene oxide propylene oxide block copolymers, low relative molecular mass polyethylene glycols e.g. PEG600 and PEG200, ethylene glycol monoesters, amine oxides and alkyl polyglycosides, alkyl sugar esters including alkyl sucrose esters and alkyl oligosaccharide ester, alkyl capped polyvinyl alcohol and alkyl capped polyvinyl pyrrolidone.

Compositions of the invention may also comprise anionic surfactants, in addition to or instead of non-ionic surfactants. Anionic surfactant may comprise a C_{10-20} alkyl benzene sulphonate or an alkyl ether sulphate which is preferably the product obtained by ethoxylating a natural fatty or synthetic C_{10-20} e.g. a C_{12-14} alcohol with from 1 to 20, preferably 2 to 10 e.g. 3 to 4 ethyleneoxy groups, optionally stripping any unreacted alcohol, reacting the ethoxylated product with a sulphating agent and neutralising the resulting alkyl ether sulphuric acid with a base. The term also includes alkyl glyceryl sulphates, and random or block copolymerised alkyl ethoxy/propoxy sulphates.

The anionic surfactant may also comprise, for example, C_{10-20} e.g. C_{12-18} alkyl sulphate.

The surfactant may comprise a C_{8-20} e.g. C_{10-20} aliphatic soap. The soap may be saturated or unsaturated, straight or branched chain.

Preferred examples include dodecanoates, myristates, stearates, oleates, linoleates, linoleates and palmitates and coconut and tallow soaps.

The surfactant may include other anionic surfactants, such as olefin sulphonates, paraffin sulphonates, taurides, isethionates, ether sulphonates, ether carboxylates, aliphatic ester sulphonates e.g. alkyl glyceryl sulphonates, sulphosuccinates or sulphosuccinamates.

The cation of any anionic surfactant is typically sodium but may alternatively be potassium, lithium, calcium, magnesium, ammonium, or an alkyl ammonium having up to 6 aliphatic carbon atoms including isopropyl ammonium, monoethanol ammonium, diethanol ammonium, and triethanol ammonium.

Ammonium and ethanol ammonium salts are generally more soluble than the sodium salts. Mixtures of the above cations may be used.

The composition may contain amphoteric surfactants such as betaines sulphobetaines, amido betaines or imidazoline betaines.

The I_1 phase may be conveniently prepared by mixing the oil and oil soluble surfactant and adding sufficient water to the water soluble surfactant to maintain a lamellar phase. The oil and oil soluble surfactant may be stirred into the lamellar composition at elevated temperature, above the melting point of the desired I_1 phase. The composition is then diluted with hot water until a microemulsion is formed and then cooled to solidify it into the I_1 phase.

The oil is preferably a mineral oil (e.g. a low molecular weight petroleum ether having, for example, a boiling point below 120°C e.g. below 100°C especially below 80°C) or a lower molecular weight fatty ester (e.g. one having less than 25 carbon atoms) such as isopropyl esters of lauric isostearic or palmitic acids or their ethyl analogues. Other oils, including higher mol weight fatty esters, e.g. oleyl oleate, fatty glycerides, terpene oils such as limonene or silicone oils may present difficulties in providing clear compositions. Such oils can nevertheless be incorporated in clear formulations by blending with sufficient mineral oil (preferably low molecular weight mineral oil). The amount required varies according to the nature of the oil. Typically the blend contains at least 16%, based on the total weight of oil, of the mineral oil, especially 30 to 80%, typically 40 to 60%. Particularly preferred are vegetable oils such as coconut, evening primrose, groundnut, meadow foam, apricot kernel, peach kernel, avocado, jojoba and olive oil.

Oil soluble cosmetic or topical pharmaceutical ingredients may be dissolve in the oil including antiseptics, styptics, antidandruff agents such as zinc omadine (zinc pyrithione) and selenium disulphide, proteins, emollients such as lanolin, isopropyl myristate, glyceryl isostearate or propylene glycol distearate, dyes, perfumes and waxes. Water insoluble particulate solids including exfoliants such as talc, clays, polymer beads, sawdust, silica, seeds, ground nutshells and dicalcium phosphate, pearlisers such as mica or glycerol or ethylene glycol mono- or di-stearate, glitter additives and sunscreens such as titanium dioxide may be dispersed in the hot microemulsion prior to cooling. Porous particles (so called micro-sponges) containing absorbed active ingredients or gelatin or other microcapsules may be suspended. Other active ingredients which may be suspended include insect repellants and topical pharmaceutical preparations, e.g. preparations for treatment of acne, fungicides for athlete's foot or ringworm or antiseptics or antihistamines. Pigments, such as the iron oxides, may also be added.

Electrolytes tend to break I_1 phase structure and are preferably present in concentrations below 10% based on total weight of the compositions, more preferably below 5%, e.g. 0 to 3%, most preferably 0 to 1%. Generally we prefer that electrolyte be substantially absent. Adventitious chloride or sulphate present as impurities in the surfactant can be tolerated. Small amounts of builder such as citrates, pyrophosphates, polyphosphates may optionally be included.

Water soluble solvents are generally undesirable and are not required to form stable I_1 structures according to the invention. We therefore prefer that they should be substantially absent. Although small amounts of, for example, ethanol or propanol or of a water miscible polyhydric alcohol or alcohol ester may sometimes be desired for special purposes, they are preferably present in amounts less than 5% by weight, more preferably less than 3% by weight, most preferably less than 2% by weight, e.g. less than 1% by weight.

The composition may optionally contain hydrotropes such as sodium lower alkyl benzene sulphonate e.g. sodium toluene, xylene or cumene sulphonate or urea, however these are not generally necessary and are not generally preferred. We prefer that these should be present in quantities less than 5% by weight, more preferably less than 4%, especially less than 2% e.g. 0 to 1%. They may be useful occasionally to avoid haziness of the gel.

The total amount of water is preferably from 25 to 60% by weight of the composition, more preferably 30 to 50%, e.g. 35 to 50%. The total weight percentage of surfactant based on the weight of the composition is preferably from 15 to 35%, e.g. 20 to 30%. The proportion of oil is preferably greater than 5%, more preferably greater than 8%, e.g. 10 to 30%, especially 15 to 25% by weight based on the weight of the composition. The oil soluble surfactant is preferably present in a proportion of more than 1:5 based on the weight of oil, more preferably from 1:2 to 5:1. The oil soluble surfactant preferably has an HLB of from 3 to 9 e.g. 4 to 8.

The weight ratio of water soluble surfactant to oil soluble surfactant is preferably 1:1 to 30:1, more preferably 2:1 to 20:1, typically 3:1 to 15:1, e.g. 4:1 to 10:1. The water soluble surfactant preferably has an HLB greater than 12, more preferably greater than 13, especially 14 to 19.

The product may be cast into shaped bodies or formed into particles or granules, e.g. by spray cooling a hot solution of the L_1 phase formed on melting the composition.

The composition may be converted into a microemulsion phase by addition of water, by heating above the melting point or by adding electrolyte such as salt and the invention includes L_1 phases when so prepared.

The invention will be illustrated by the following examples:

Example 1

The following ingredients were mixed at 60°C and cooled to form a ringing gel:

Component	Solids (%)	w/w (%)
MINERAL OIL (100%)	20	20
"EMPICOL"® 0251/70J (70%)	11.2	16
"EMPIGEN"® BB (30%)	4.8	16
"GLUCAPON"® 215 CS UP (65%)	6	9.2
"EMPILAN"® KB2 (100%)	7.5	7.5
SODIUM CHLORIDE (100%)	2	2
PERFUME (100%)	0.5	0.5
ETHYLENE DIAMINE TETRACETIC ACID (100%)	0.1	0.1
CITRIC ACID (100%)	0.2	0.2
BENZOIC ACID (100%)	0.3	0.3
SODIUM HYDROXIDE (47%)	0.1	0.2
WATER	---	Balance

The method of mixing comprised the following steps:-

1. Charge 50% of water
2. Heat to 60°C
3. Add EDTA, sodium benzoate, citric acid and 47% NaOH dissolve with stirring
4. Add "EMPIGEN" BB
5. Add mineral oil and disperse with stirring
6. Add "EMPILAN" KB 2 and mix thoroughly
7. Add "EMPICOL" 0251/70j
8 Add remaining water
9 Add "GLUCAPON" 215 CS UP
10. Add further KB 2 until clear
11. Cool
12. Add evaporated water
13. Adjust pH

Physical Data

pH (10%)	: 5.5 ± 0.1	Density @ 20°C	: 1.0 ± 0.1 g cm^{-3}
Solids (%)	: ~ 53% (typical)	Appearance	: Clear or Hazy Gel
Odour	: Characteristic	Set Point (typical)	: 30°C
Viscosity @ 20°C : N/A			

The product was examined by x-ray diffraction and exhibited peaks at 13.145nm (intense and sharp), 7.943nm (ill defined) and 6.355nm (small), indicating cubic symmetry, and formed a clear microemulsion on dilution or heating. The latter gave good even distribution of oil applied to skin.

Example 2

The following ingredients were mixed at 60°C and cooled to form a ringing gel:

Component	Solids (%)	w/w (%)
MINERAL OIL (100%)	15	15
"EMPICOL"® CDL30J/35 (22%)	8	35.4
"EMPIGEN"® BB (30%)	8	26.7
"EMPICOL"® 0785 (40%)	2	5
"EMPILAN"® KB2 (100%)	6	6
"EMPILAN"® KB6 (100%)	6	6
CITRIC ACID (100%)	0.5	0.5
PERFUME (100%)	0.2	0.2
ETHYLENE DIAMINE TETRACETIC ACID (100%)	0.2	0.2
"KATHON"®	---	0.2
WATER	---	Balance
TOTAL	**45.8**	**100**

Physical Data

Appearance	: Clear Liquid/Gel	Odour	: Characteristic Odour
Solids	: 36.5% (typical)	pH (100%)	: 5.5 - 6.5 (typical
Odour	: Characteristic	Set Point	: 20 ± 5°C

Viscosity (Carrimed Rheometer @ 20°C : N/A

The product had small angle x-ray diffraction peaks characteristic of cubic symmetry and formed a clear microemulsion on dilution with water or warming. The latter gave good even deposition of oil on skin.

Examples 3 and 4

The following ingredients were mixed at 60°C and cooled to form ringing gels:

Component	1		2	
	Solids (%)	w/w (%)	Solids (%)	w/w (%)
"EMPIGEN"® CDL30J/35 (22%)	8	36.4	8	36.4
"EMPIGEN"® BB (30%)	8	26.7	8	26.7
"EMPICOL"® LB40 (40%)	4	7.5	3	7.5
"EMPICOL"® CVH (90%)	4	4	---	---
"EMPILAN"® KB2 (100%)	5.5	5.5	6	6
TRIETHANOLAMINE (100%)	1.1	1.1	---	---
CITRIC ACID	1	0.75	0.75	0.75
ETHYLENE DIAMINE TETRACETIC ACID	0.05	0.05	0.05	0.05
"KATHON"® CG (100%)	0.05	0.05	0.05	0.05
LIGHT MINERAL (100%)	14	14	20	20
WATER	---	Balance	---	Balance
TOTAL	**45.7**	**100**	**46.1**	**100**
Appearance	Clear Gel		Clear Gel	

The following ingredients were mixed at 60 ^{0}C and cooled to form a clear 'ringing' gel.

Example 5

Component	Solids (%)	W/W (%)
LIGHT MINERAL OIL ("KRISTOL" ® M14) (100 %)	18	18
"EMPICOL" ® 0251 70 J (70 %)	12	17.2
"EMPICOL" ® CED5 FL (100 %)	5	5
"EMPILAN" ® KBE2 (100 %)	3	3
"EMPILAN" ® KB6 (100 %)	3	3
"EMPIGEN" ® BB (30 %)	3	10
SODIUM CHLORIDE (100 %)	4	4
GLYCEROL (100 %)	2	2
SODIUM HYDROXIDE (50 %)	0.4	0.8
ETHYLENE DIAMINE TETRACETIC ACID (100 %) Na SALT	0.1	0.1
CITRIC ACID (100 %)	0.2	0.2
SODIUM BENZOATE (100 %)	0.3	0.3
WATER	-	Balance

Example 6

Component	Solids (%)	W/W (%)
HEAVY MINERAL OIL ("KRISTOL" ® M70) (100 %)	18	18
"EMPICOL" ® 0251 70 J (70 %)	10.5	15
"EMPICOL" ® CED5 FL (100 %)	6	6
"EMPILAN" ® KB2 (100 %)	3.5	3.5
"EMPILAN" ® KB12 (100 %)	5	5
"EMPIGEN" ® BB (30 %)	3	10
SODIUM CHLORIDE (100 %)	4	4
GLYCEROL (100 %)	2	2
SODIUM HYDROXIDE (50 %)	0.5	1.0
ETHYLENE DIAMINE TETRACETIC ACID (100 %) Na SALT	0.1	0.1
CITRIC ACID (100 %)	0.2	0.2
SODIUM BENZOATE (100 %)	0.3	0.3
WATER	-	Balance

Physical Data

Density @ 20^0C : 1.0 +/- 0.1	pH (10 %) : 5.5 +/- 0.5
Appearance: Clear or hazy gel	Odour : Characteristic
Set point (typical): 35 +/- 5^0C	Viscosity @ 20^0C: N/A

Method for examples 5 and 6

i) Charge water and heat to 60^0C.

ii) Add EDTA, sodium benzoate, citric acid and NaOH. Dissolve with stirring.

iii) Add "EMPICOL" CED5 FL and mix thoroughly.

iv) Add glycerol.

v) Add NaCl and disperse with stirring.

vi) Add "EMPILAN" KBE2 and "EMPILAN" KB6 or "EMPILAN" KB12. Disperse with stirring.

vii) Add "EMPIGEN" BB.

viii) Add mineral and disperse with stirring.

ix) Add "EMPICOL" 0251 70J and disperse with stirring.

x) Add additional nonionic surfactant to clear (if necessary).

xi) Cool to 40^0C.

xii) Add evaporated water

xiii) Adjust pH and offload.

Example 7

Component	Solids (%)	W/W (%)
LIGHT MINERAL OIL ("KRISTOL" ® M14) (100 %)	9	9
DOW CORNING DC 556 SILICONE FLUID (100 %)	9	9
"EMPICOL" 0251 70 J (70 %)	12	17.2
"EMPICOL" CED5 FL (100 %)	5	5
"EMPILAN" KB2 (100 %)	3.5	3.5
"EMPILAN" KB12 (100 %)	3.5	3.5
"EMPIGEN" BB (30 %)	3	10
SODIUM CHLORIDE (100 %)	4	4
GLYCEROL (100 %)	2	2
SODIUM HYDROXIDE (50 %)	0.4	0.8
ETHYLENE DIAMINE TETRACETIC ACID (100 %) Na SALT	0.1	0.1
CITRIC ACID (100 %)	0.2	0.2
SODIUM BENZOATE (100 %)	0.3	0.3
WATER	-	Balance

The formulation forms a microemulsion at 60^0C and forms a gel when cooled to ambient temperature.

Example 8

Component	Solids (%)	W/W (%)
HEAVY MINERAL OIL ("KRISTOL" ® M70) (100 %)	15	15
"CERAPHYL" ® GA-D (100 %)	5	5
"EMPICOL" 0251 70 J (70 %)	12	17.2
"EMPICOL" CED5 FL (100 %)	5	5
"EMPILAN" KBE2 (100 %)	3.0	3.0
"EMPILAN" KB12 (100 %)	4.5	4.5
"EMPIGEN" BB (30 %)	3	10
SODIUM CHLORIDE (100 %)	4	4
GLYCEROL (100 %)	2	2
SODIUM HYDROXIDE (50 %)	0.4	0.8
ETHYLENE DIAMINE TETRACETIC ACID (100 %) Na SALT	0.1	0.1
CITRIC ACID (100 %)	0.2	0.2
SODIUM BENZOATE (100 %)	0.3	0.3
WATER	-	Balance

A hazy/opaque emulsion is formed at 60^0C and cools to form a clear 'ringing' gel at ambient temperature.

Physical Data

Density @ 20^0C : 1.0 +/-0.1

pH (10 %) : 5.5 +/- 0.5

Appearance: Clear or hazy gel

Odour : Characteristic

Set point (typical): 35 +/- 5^0C

Viscosity @ 20^0C: N/A

Method for examples 7 and 8

i) Charge water and heat to 60^0C.

ii) Add EDTA, sodium benzoate, citric acid and NaOH. Dissolve with stirring.

iii) Add "EMPICOL" CED5 FL and mix thoroughly.

iv) Add glycerol.

v) Add NaCl and disperse with stirring.

vi) Add "EMPILAN" KBE2 and "EMPILAN" KB12. Disperse with stirring.

vii) Add "EMPIGEN" BB.

viii) Blend 50/50 oil phase - oil and cosmetic ingredient. Add to aqueous surfactant solution. Disperse with stirring to form homogeneous emulsion.

ix) Add "EMPICOL" 0251 70J and disperse.

x) Cool to 40^0C.

xi) Add evaporated water.

xii) Adjust pH and offload.

If gel is opaque, re-heat and add additional nonionic surfactant or water.

Example 10

Component	Solids (%)	W/W (%)
LIGHT MINERAL OIL ("KRISTOL" ® M14) (100 %)	10	10
"MIGLYOL" ® 818 (100 %)	10	10
"EMPICOL" ® 0251 70 J (70 %)	11	15.7
"EMPICOL" ® CED5 FL (100 %)	6	6
"EMPILAN" ® KBE2 (100 %)	3.5	3.5
"EMPILAN" ® KB12 (100 %)	5	5
"EMPIGEN" ® BB (30 %)	3	10
SODIUM CHLORIDE (100 %)	5	5
GLYCEROL (100 %)	1	1
SODIUM HYDROXIDE (50 %)	0.5	1
ETHYLENE DIAMINE TETRACETIC ACID (100 %) Na SALT	0.1	0.1
CITRIC ACID (100 %)	0.2	0.2
SODIUM BENZOATE (100 %)	0.3	0.3
WATER	-	Balance

Forms a microemulsion at 60^0C and a 'ringing' gel is obtained after cooling.

Example 11

Component	Solids (%)	W/W (%)
LIGHT MINERAL OIL ("KRISTOL" ® M14) (100 %)	10	10
"MIGLYOL" ® 840	10	10
"EMPICOL" ® 0251 70 J (70 %)	11	15.7
"EMPICOL" ® CED5 FL (100 %)	6	6
"EMPILAN" KBE2 (100 %)	3.5	3.5
"EMPILAN" ® KB12 (100 %)	5	5
"EMPIGEN" ® BB (30 %)	3	10
SODIUM CHLORIDE (100 %)	5	5
GLYCEROL (100 %)	1	1
SODIUM HYDROXIDE (50 %)	0.5	1
ETHYLENE DIAMINE TETRACETIC ACID (100 %) Na SALT	0.1	0.1
CITRIC ACID (100 %)	0.2	0.2
SODIUM BENZOATE (100 %)	0.3	0.3
WATER	-	Balance

Physical Data

Density @ 20^0C : 1.0 +/- 0.1	pH (10 %) : 5.5 +/- 0.5
Appearance: Clear or hazy gel	Odour : Characteristic
Set point (typical): 35 +/- 5^0C	Viscosity @ 20^0C: N/A

Method for examples 9, 10 and 11

i) Blend 50/50 oil phase – oil and cosmetic ingredient. Heat to 60^0C.

ii) Add glycerol and stir to disperse.

iii) Add "EMPILAN" KBE2 and "EMPILAN" KB12. Disperse with stirring.

iv) Add "EMPICOL" CED5 FL.

v) Add "EMPIGEN" BB.

vi) Add "EMPICOL" 0251 70J.

vii) Add EDTA, citric acid, sodium benzoate and NaCl. Disperse with stirring.

viii) Add water.

ix) Add NaOH.

x) Cool to 40^0C.

xi) Add evaporated water.

xii) Adjust pH and offload.

Example 12

Component	Solids (%)	W/W (%)
EMOLLIENT – FATTY ACID ESTER (100 %)	20	20
"EMPICOL" ® 0251 70 J (70 %)	12	17.2
"EMPICOL" ® CED5 FL (100 %)	5	5
"EMPILAN" ® KB6 (100 %)	5	5
"EMPIGEN" ® BB (30 %)	3	10
SODIUM CHLORIDE (100 %)	5	5
GLYCEROL (100 %)	1	1
SODIUM HYDROXIDE (50 %)	0.4	0.8
ETHYLENE DIAMINE TETRACETIC ACID (100 %) Na SALT	0.1	0.1
CITRIC ACID (100 %)	0.2	0.2
SODIUM BENZOATE (100 %)	0.3	0.3
WATER	-	Balance

Clear gels have been prepared using the following fatty acid esters:

Isopropyl laurate ("ESTOL" ® IPL 1505)
Isopropyl myristate ("ESTOL" ® IPM 1512)
Isopropyl palmitate ("ESTOL" ® IPP 1517)
Isopropyl isostearate ("SCHERCOMOL" ® 318)

Physical Data

Density @ 20^0C : 1.0 +/- 0.1
pH (10 %) : 5.5 +/- 0.5
Appearance: Clear or hazy gel
Odour : Characteristic
Set point (typical): 35 +/- 5^0C
Viscosity @ 20^0C: N/A

Method for example 12

i) Heat oil phase to 60^0C.

ii) Add "EMPILAN" KB6 and stir to disperse.

iii) Add glycerol and stir to disperse.

iv) Add "EMPIGEN" BB.

v) Add "EMPICOL" CED5 FL.

vi) Add "EMPICOL" 0251 70J.

vii) Add EDTA, NaCl, sodium benzoate and citric acid. Stir to disperse.

viii) Add water.

ix) Add NaOH.

x) Cool to 40^0C.

xi) Add evaporated water.

xii) Check pH (10 %).

xiii) Adjust pH and offload.

The products in each case exhibited cubic symmetry and formed clear microemulsions or dilution with water or heating. The registered trade marks noted above have the following significance:-

"EMPICOL" CVH is a C_8 alkyl ether carboxylic acid

"EMPICOL" LB40 is a C_8 C_{10} alkyl sulphate

"EMPICOL" 0251/70J is a C_{12-14} alkyl 3 mole ethoxy sulphate

"EMPICOL" 9758 is a C_{10} alkyl sulphate

"EMPICOL" CED 5FL is lauryl 6 mole ethoxy carboxylic acid

"EMPIGEN" BB is a C_{12-14} alkyl betaine

"EMPIGEN" CDL is coconut ampho acetate

"EMPILAN" KB2 is a C_{12-14} alkyl 2 mole ethoxylate

"EMPILAN" KB6 is a C_{12-14} alkyl 6 mole ethoxylate

"EMPILAN" KB12 is a C_{12-14} alkyl 12 mole ethoxylate

"GLUCAPON" 215CS is a C_{8-10} alkyl polyclucoside D.P. 1.5

"KATHON" CG is a proprietary biocide

"DOW CORNING" DC556 is phenyl trimethicone

"CERAPHYL" GA-D is maleated soya bean oil

"MIGLYOL" 810/812S is capric/caprylic triglyceride

"MIGLYOL" is capric/caprylic/linoleic trigyceride

"MIGLYOL" 840 is dipropylene glycol dicaprylate/dicaprate

CLAIMS

1. A concentrated personal cleansing composition comprising, by weight of the composition, at least 20% water, 10 to 40% total surfactant and 2 to 40% of oil wherein said surfactant comprises (A) an oil soluble surfactant having an HLB of from 2 to 10 in a proportion of from 8:1 to 1:5 based on the weight of oil and (B) a hydrophilic surfactant having an HLB greater than 11, in a weight proportion of from 1:1 to 1:30 based on the weight of (A), said surfactant water and oil being present in proportions adapted to form an I_1 phase having an I_1/L_1 transition temperature greater than 25°C.

2. A composition according to claim 1 wherein the total surfactant has a mean HLB between 10 and 15.

3. A composition according to claim 1 wherein said oil comprises a mineral, fatty ester, glyceride, terpene or silicone oil

4. A composition according to either of claims 1 and 3 wherein the oil comprises at least 16% based on the weight of oil, of a mineral oil.

5. A method for preparing a composition according to claim 1 comprising : (i) forming a mixture (a) of said oil and said oil soluble surfactant; (ii) mixing said mixture (a) with a mixture (b) of said water soluble surfactant and sufficient water to form a lamellar phase with said water soluble surfactant; (iii) maintaining said mixture of (a) and (b) above the I_1/L_1 transition temperature of said composition while diluting said mixture of (a) and (b) with water to form said composition; and (iv) cooling said composition below the I_1/L_1 transition temperature.

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PATENTS ACT 1977

PRELIMINARY SPECIFICATION
(Description)

PERSONAL CARE FORMULATIONS

Applicant : ALBRIGHT & WILSON UK LIMITED

Inventors :

MPL315

PERSONAL CARE FORMULATIONS

The present invention relates to shampoo or cleaning compositions suitable for personal care applications in the form of I_1 mesophase systems containing dispersed oil.

Dispersing oil in aqueous shampoo and body wash formulations has presented problems. To prevent the oil phase separating it must either be: (A) emulsified which involves dispersing the oil as colloidal single droplets; (B) microemulsified which involves forming a micellar solution with oil incorporated into surfactant micelles; (C) suspended in a structured surfactant system which typically comprises a dispersion of a surfactant mesophase in aqueous electrolyte; or (D) incorporated into a water soluble solid, pasty or gelatinous composition.

With the exception of microemulsions which are clear, thermodynamically stable, micellar solutions, the foregoing systems are necessarily opaque and contain the oil dispersed in a relatively coarse form, which does not deposit satisfactorily on skin or hair.

However microemulsions are difficult to formulate using the surfactants which are most effective in body wash and other personal care formulations and contain relatively low concentrations of surfactant.

We have now discovered that oil may be stably incorporated into the structure of an I_1 phase to form a clear gel-like composition which contains higher concentrations of surfactant and oil than conventional microemulsions, but, which dissolves in water to form a microemulsion. The novel oil-in-I_1 compositions also form microemulsions on heating.

Surfactants are known to form mesophases or liquid crystal phases at concentrations above approximately 30% by weight based on the weight of water and surfactant. Mesophases are phases which exhibit a degree of order intermediate between typical liquids and solids. Generally mesophases combine long range order associated with crystals, with fast molecular motion common to liquids.

The formation of detergent mesophases is well documented. Different surfactants and surfactant mixtures differ widely in their ability to form the numerous different mesophases, and in respect of the conditions of concentration and temperature at which they are formed. For a typical surfactant of the type normally used in cleaning products the following mesophases are usually observed. The concentrations given are illustrative only and may vary considerably from one surfactant or surfactant mixture to the next.

Below approximately 30% surfactant an isotropic L_1 phase is formed (with micelles of surfactant in water). Above 30% surfactant many detergents form a M phase which is not normally used in personal care applications since it dos not show suitable flow characteristics and is difficult to dissolve or disperse in water. Above the concentrations required to form an M phase, but usually at concentrations of less than 80% active surfactant, i.e. 60%-80% a G-phase is formed. At concentrations higher than those required to form a G-phase, i.e. typically greater than 80% active surfactant, most surfactants form a hydrated solid, and some, especially non-ionic surfactants form a liquid phase containing dispersed micelle sized droplets of water - an inverted micellar solution known as an L_2 phase. L_2 detergent systems do not disperse readily in water and have a tendency to form undesirable gels, e.g. M phases, on dilution.

Some surfactants form viscous isotropic or VI phases. These are immobile phases usually with a vitreous appearance, and have been relatively little studied compared to the other phases discussed above. They have been virtually ignored in the context of formulating cleaning compositions because most of the surfactants and surfactant systems which are commonly used in cleaning compositions do not form VI phases, at least at normal temperatures, or form them only within narrow concentration ranges and because their known properties as immobile gels has deterred formulators from investigating them. They are recognised as being the most viscous of the lyotropic mesophases.

The different surfactant phases can be recognised by a combination of appearance, rheology, textures under the microscope, electron microscopy and x-ray diffraction or neutron scattering. A detailed description, with illustrations, of the difference textures observable using a polarising microscope, is to be found in the paper by Rosevear JAOCS Vol 31, p628.

The following terms may require explanation or definition:

The "hydrophilic: lipophilic balance", or "HLB" value is used as a measure of the relative affinities of the surfactants for water and oil respectively and correlates with their effectiveness as emulsifiers. HLB value can easily be calculated for alcohol ethoxylates since it is one fifth of the weight percent of ethylene oxide based on the total mole weight. Other surfactants can be assigned equivalent values by applying more complicated formulae or by measuring their relative affinity for water and oil. An HLB value of 20 represents a completely water soluble oil insoluble surfactant, while an HLB value of 0 represents a completely oil soluble and water insoluble surfactant.

"Optically isotropic" surfactant phases do not normally tend to rotate the plane of polarisation of plane polarised light. If a drop of sample is placed between two sheets of optically plane polarising material whose planes are at right angles, and light is shone on to one sheet, optically isotropic surfactant samples do not appear substantially brighter than their surrounding when viewed through the other sheet. Optically anisotropic materials appear substantially brighter. Optically anisotropic mesophases typically show characteristic textures when viewed through a microscope between crossed polarisers, whereas optically isotropic phases usually show a featureless continuum.

"Newtonian liquids" have a viscosity which remains constant at different shear rates. For the purpose of this specification, liquids are considered Newtonian if the viscosity does not vary substantially at shear rates up to 1000 sec^{-1}.

"Lamellar" phases are phases which comprise a plurality of bilayers of surfactant arranged in parallel and separated by liquid medium. They include both solid phases and the typical form of the liquid crystal G-phase. G-phases are typically pourable, non-Newtonian, anisotropic products. They are typically viscous-looking, opalescent materials with a characteristic "smeary" appearance on flowing. They form characteristic texture under the polarising microscope and freeze fractured samples have a lamellar appearance under the electron microscope. X-ray diffraction or neutron scattering similarly reveal a lamellar structure, with a principal peak typically between 4 and 10nm, usually 5 to 6nm. Higher order peaks, when present occur at double or higher integral multiples of the Q value of the principal peak. Q is the momentum transfer vector and is related, in the case of lamellar phases, to the repeat spacing d by the equation $Q=\frac{2n}{d}$ [pi]

where n is the order of the peak.

G-phases, however, can exist in several different forms, including domains of parallel sheets which constitute the bulk of the typical G-phases described above and spherulites formed from a number of concentric spheroidal shells, each of which is a bilayer of surfactant. In this specification the term "lamellar" will be reserved for compositions which are at least partly of the former type. Opaque compositions at least predominantly of the latter type in which the continuous phase is a substantially isotropic solution containing dispersed spherulites are referred to herein as "G-phase compositions". G-phases are sometimes referred to in the literature as $L_{(alpha)}$ phases.

L_1-phases are mobile, optically isotropic, and typically Newtonian liquids which show no texture under the polarising microscope. Electron microscopy is capable of resolving the texture of such phases only at very high magnifications, and X-ray or neutron scattering normally gives only a single broad peak typical of a liquid structure, at very small angles close to the reference beam. The viscosity of an L_1-phase is usually low, but may rise significantly as the concentration approaches the upper phase boundary.

"M-phases" are typically immobile, anisotropic products resembling low melting point waxes. They give characteristic textures under the polarising microscope, and a hexagonal diffraction pattern by X-ray or neutron diffraction which comprises a major peak, usually at values corresponding to a repeat spacing between 4 and 10nm, and sometimes higher order peaks, the first at a Q-value which is $3^{0.5}$ times the Q-value of the principal peak and the next double the Q-value of the principal peak. M-phases are sometimes referred to in the literature as H-phases.

The viscous isotropic or "VI" phases are typically immobile, non-Newtonian, optically isotropic and are typically transparent, at least when pure. VI phases have a cubic symmetrical diffraction pattern, under X-ray diffraction or neutron scattering, with a principal peak and higher order peaks at $2^{0.5}$ and $3^{0.5}$ times the Q-value of the principal peak.

These cubic liquid crystalline phases are sometimes observed immediately following the micellar phase at ambient temperature as the concentration of surfactant is increased. It has been proposed that such VI phases, sometimes referred to as I_1 phase, may arise from the packing of micelles (probably spherical) in a cubic lattice. At ambient temperature a further increase in surfactant concentration usually results in hexagonal phase (M_1), which may be followed by a lamellar phase (G). I_1 phases, when they occur, are usually only observed over a narrow range of concentrations, typically just above those at which the L_1-phase is formed. The location of such VI phases in a phase diagram suggests that the phase is built up of small closed surfactant aggregates in a water continuum.

An inverse form of the I_1 phase (the I_2 phase) has also been reported, possibly between the inverse hexagonal (M_2) and L_2 phases. It consists of a surfactant continuum containing a cubic array of inverted micelles. An alternative form of the VI phase called the V_1 phase has been observed at concentrations between the M and G phases and may comprise a bicontinuous system. This may exhibit an even higher viscosity than the I_1. An inverse phase, the V_2 phase, between the G and M_2 phases has also been postulated.

VI phases are typically examples of "ringing gels". When a jar or beaker containing such a phase is sharply struck, a distinctive vibration can be felt in the composition.

The I_1/L_1 transition temperature will be referred to herein as the melting point of the I_1 phase for convenience, although it is not strictly speaking the melting point since the VI phases are not solids.

All references herein to the formation or existence of specific phases or structures are to be construed, unless the context requires otherwise, as references to their formation or existence at 20°C.

Hexagonal gels (M-phase) have been referred to in the prior art as cleaning compositions, e.g. GB 2 179 055, EP I 153 837 and colloidal gels formed with gelling agents such as synthetic polymers or gelatin have also been suggested, e.g. US 4 465 663.

However these compositions cannot be readily dissolved in water to form microemulsions. They are moreover usually opaque and of an unattractive appearance and often require the presence of solvents such as glycols which add to the cost and are environmentally undesirable.

The use of a type of ringing gel to suspend oil for cosmetic or pharmaceutical applications was described in US 4 026 818 but the formulation requires the presence of hydroxylic solvents and utilises a surfactant system which is unsuitable for shampoo applications. EP O 598 335 describes the use of various cubic phases including I_1 phases as laundry prespotters and for other cleaning formulations. If does not suggest how such phases could be used to suspend oil or form microemulsions. Normally attempts to suspend oil in surfactant mesophases result in coarse droplets of oil being suspended in the aqueous phase of a structured surfactant.

Our invention provides a concentrated personal cleansing composition comprising at least 20% water, 10 to 40% total surfactant and 2 to 40% of a mineral, glyceride, terpene or silicone oil wherein said surfactant comprises (A) an oil soluble surfactant having an HLB of from 2 to 10 in a proportion of from 8:1 to 1:5 based on the weight of oil and (B) a hydrophilic surfactant having an HLB greater than 11, in a weight proportion of from 1:1 to 1:30 based on the weight of (A), said surfactant water and oil being present in proportions adapted to form an I_1 phase having an I_1/L_1 transition temperature greater than 25°C.

The surfactants are preferably selected to provide an I_1 phase over a comparatively broad surfactant concentration range e.g. more than ± 5% or greater, which range typically lies above 15% by weight total surfactant based on the weight of the composition e.g. between 20% and 40% by weight surfactant usually between 25% and 60%.
The surfactants are preferably selected to provide an I_1 phase which melts above 30°C e.g. above 35°C, most preferably above 40°C. Preferably the I_1 phase melts at a temperature substantially below 100°C, e.g. below 90°C, more preferably below 80°C, most preferably below 70°C, especially below 60°C, typically below 55°C, usually below 50°C.

The surfactant mixture preferably has a mean HLB based on the molar proportions of the components between 10 and 15 e.g. 11 to 14. The surfactants preferably comprise non-ionic surfactants such as ethoxylated alcohols. It has been found that highly ethoxylated fatty alcohols, e.g. more than 10 EO groups, preferably more than 15 EO groups, especially 18 to 50 EO groups form I_1 phases particularly readily.

Other non-ionic surfactants which may be present include:-

alkyl phenol ethoxylates, fatty acid ethoxylates, fatty acid monoalkylolamide ethoxylates, fatty alcohol propoxylates, fatty anime alkoxylates and fatty acid glyceryl ester ethoxylates. Other non-ionic compounds suitable for inclusion in compositions of the present invention include mixed ethylene oxide propylene oxide alkoxylates, low relative molecular mass polyethylene glycols e.g. PEG600 and PEG200, ethylene glycol monoesters, amine oxides and alkyl polyglycosides, alkyl sugar esters including alkyl sucrose esters and alkyl oligosaccharide ester, alkyl capped polyvinyl alcohol and alkyl capped polyvinyl pyrrolidone.

Compositions of the invention may also comprise anionic surfactants, in addition to or instead of non-ionic surfactants. Anionic surfactant may comprise a C_{10-20} alkyl benzene sulphonate or an alkyl ether sulphate which is preferably the product obtained by ethoxylating a natural fatty or synthetic C_{10-20} e.g. a C_{12-14} alcohol with from 1 to 20, preferably 2 to 10 e.g. 3 to 4 ethyleneoxy groups, optionally stripping any unreacted alcohol, reacting the ethoxylated product with a sulphating agent and neutralising the resulting alkyl ether sulphuric acid with a base. The term also includes alkyl glyceryl sulphates, and random or block copolymerised alkyl ethoxy/propoxy sulphates.

The anionic surfactant may also comprise, for example, C_{10-20} e.g. C_{12-18} alkyl sulphate.

The surfactant may comprise a C_{8-20} e.g. C_{10-20} aliphatic soap. The soap may be saturated or unsaturated, straight or branched chain.

Preferred examples include dodecanoates, myristates, stearates, oleates, linoleates, linoleates and palmitates and coconut and tallow soaps.

The surfactant may include other anionic surfactants, such as olefin sulphonates, paraffin sulphonates, taurides, isethionates, ether sulphonates, ether carboxylates, aliphatic ester sulphonates e.g. alkyl glyceryl sulphonates, sulphosuccinates or sulphosuccinamates.

The cation of any anionic surfactant is typically sodium but may alternatively be potassium, lithium, calcium, magnesium, ammonium, or an alkyl ammonium having up to 6 aliphatic carbon atoms including isopropyl ammonium, monoethanol ammonium, diethanol ammonium, and triethanol ammonium.

Ammonium and ethanol ammonium salts are generally more soluble than the sodium salts. Mixtures of the above cations may be used.

The composition may contain amphoteric surfactants such as betaines sulphobetaines, amido betaines or imidazoline betaines.

The I_1 phase may be conveniently prepared by mixing the oil and oil soluble surfactant and adding sufficient water to the water soluble surfactant to maintain a lamellar phase. The oil and oil soluble surfactant may be stirred into the lamellar composition at elevated temperature, above the melting point of the desired I_1 phase. The composition is then diluted with hot water until a microemulsion is formed and then cooled to solidify it into the I_1 phase.

The oil is preferably a mineral oil (e.g. a low molecular weight petroleum ether) or a fatty glyceride, a terpene oil such as limonene or a silicone oil. Mixtures of oils may be used. Particularly preferred are vegetable oils such as coconut, evening primrose, groundnut, meadow foam, apricot kernel, peach kernel, avocado, jojoba and olive oil. Oil soluble cosmetic or topical pharmaceutical ingredients may be dissolve in the oil including antiseptics, styptics, antidandruff agents such as zinc omadine (zinc pyrithione) and selenium disulphide, proteins, emollients such as lanolin, isopropyl myristate, glyceryl isostearate or propylene glycol distearate, dyes, perfumes and waxes. Water insoluble particulate solids including exfoliants such as talc, clays, polymer beads, sawdust, silica, seeds, ground nutshells and dicalcium phosphate, pearlisers such as mica or glycerol or ethylene glycol mono- or di-stearate, glitter additives and sunscreens such as titanium dioxide may be dispersed in the hot microemulsion prior to cooling. Porous particles (so called micro-sponges) containing absorbed active ingredients or gelatin or other microcapsules may be suspended. Other active ingredients which may be suspended include insect repellants and topical pharmaceutical preparations, e.g. preparations for treatment of acne, fungicides for athlete's foot or ringworm or antiseptics or antihistamines. Pigments, such as the iron oxides, may also be added.

Electrolytes tend to break I_1 phase structure and are preferably present in concentrations below 10% based on total weight of the compositions, more preferably below 5%, e.g. 0 to 3%, most preferably 0 to 1%. Generally we prefer that electrolyte be substantially absent. Adventitious chloride or sulphate present as impurities in the surfactant can be tolerated. Small amounts of builder such as citrates, pyrophosphates, polyphosphates may optionally be included.

Water soluble solvents are generally undesirable and are not required to form stable I_1 structures according to the invention. We therefore prefer that they should be substantially absent. Although small amounts of, for example, ethanol or propanol may sometimes be desired for special purposes, they are preferably present in amounts less than 5% by weight, more preferably less than 3% by weight, most preferably less than 2% by weight, e.g. less than 1% by weight.

The composition may optionally contain hydrotropes such as sodium lower alkyl benzene sulphonate e.g. sodium toluene, xylene or cumene sulphonate or urea, however these are not generally necessary and are not generally preferred. We prefer that these should be present in quantities less than 5% by weight, more preferably less than 4%, especially less than 2% e.g. 0 to 1%. They may be useful occasionally to avoid haziness of the gel.

The total amount of water is preferably from 25 to 60% by weight of the composition, more preferably 30 to 50%, e.g. 35 to 50%. The total weight percentage of surfactant based on the weight of the composition is preferably from 15 to 35%, e.g. 20 to 30%. The proportion of oil is preferably greater than 5%, more preferably greater than 8%, e.g. 10 to 30%, especially 15 to 25% by weight based on the weight of the composition. The oil soluble surfactant is preferably present in a proportion of more than 1:5 based on the weight of oil, more preferably from 1:2 to 5:1. The oil soluble surfactant preferably has an HLB of from 3 to 9 e.g. 4 to 8.

The weight ratio of water soluble surfactant to oil soluble surfactant is preferably 1:1 to 30:1, more preferably 2:1 to 20:1, typically 3:1 to 15:1, e.g. 4:1 to 10:1. The water soluble surfactant preferably has an HLB greater than 12, more preferably greater than 13, especially 14 to 19.

The product may be cast into shaped bodies or formed into particles or granules, e.g. by spray cooling a hot solution of the L_1 phase formed on melting the composition.

The composition may be converted into a microemulsion phase by addition of water, by heating above the melting point or by adding electrolyte such as salt and the invention includes L_1 phases when so prepared.

The invention will be illustrated by the following examples:

Example 1

The following ingredients were mixed at 60°C and cooled to form a ringing gel:

Component	Solids (%)	w/w (%)
MINERAL OIL (100%)	20	20
"EMPICOL"® 0251/70J (70%)	11.2	16
"EMPIGEN"® BB (30%)	4.8	16
"GLUCAPON"® 215 CS UP (65%)	6	9.2
"EMPILAN"® KB2 (100%)	7.5	7.5
SODIUM CHLORIDE (100%)	2	2
PERFUME (100%)	0.5	0.5
ETHYLENE DIAMINE TETRACETIC ACID (100%)	0.1	0.1
CITRIC ACID (100%)	0.2	0.2
BENZOIC ACID (100%)	0.3	0.3
SODIUM HYDROXIDE (47%)	0.1	0.2
WATER	---	Balance

The method of mixing comprised the following steps:-

1. Charge 50% of water
2. Heat to 60°C
3. Add EDTA, sodium benzoate, citric acid and 47% NaOH dissolve with stirring
4. Add "EMPIGEN" BB
5. Add mineral oil and disperse with stirring
6. Add "EMPILAN" KB 2 and mix thoroughly
7. Add "EMPICOL" 0251/70j
8 Add remaining water
9 Add "GLUCAPON" 215 CS UP
10. Add further KB 2 until clear
11. Cool
12. Add evaporated water
13. Adjust pH

		Physical Data	
pH (10%)	: 5.5 ± 0.1	Density @ 20°C	: 1.0 ± 0.1 g cm^{-3}
Solids (%)	: ~ 53% (typical)	Appearance	: Clear or Hazy Gel
Odour	: Characteristic	Set Point (typical)	: 30°C
Viscosity @ 20°C	: N/A		

The product was examined by x-ray diffraction and exhibited peaks at 13.145nm (intense and sharp), 7.943nm (ill defined) and 6.355nm (small), indicating cubic symmetry, and formed a clear microemulsion on dilution or heating. The latter gave good even distribution of oil applied to skin.

Example 2

The following ingredients were mixed at 60°C and cooled to form a ringing gel:

Component	Solids (%)	w/w (%)
MINERAL OIL (100%)	15	15
"EMPICOL"® CDL30J/35 (22%)	8	35.4
"EMPIGEN"® BB (30%)	8	26.7
"EMPICOL"® 0785 (40%)	2	5
"EMPILAN"® KB2 (100%)	6	6
"EMPILAN"® KB6 (100%)	6	6
CITRIC ACID (100%)	0.5	0.5
PERFUME (100%)	0.2	0.2
ETHYLENE DIAMINE TETRACETIC ACID (100%)	0.2	0.2
"KATHON"®	---	0.2
WATER	---	Balance
TOTAL	**45.8**	**100**

Physical Data

Appearance	: Clear Liquid/Gel	Odour	: Characteristic Odour
Solids	: 36.5% (typical)	pH (100%)	: 5.5 - 6.5 (typical
Odour	: Characteristic	Set Point	: 20 ± 5°C

Viscosity (Carrimed Rheometer @ 20°C : N/A

The product had small angle x-ray diffraction peaks characteristic of cubic symmetry and formed a clear microemulsion on dilution with water or warming. The latter gave good even deposition of oil on skin.

Examples 3 and 4

The following ingredients were mixed at 60°C and cooled to form ringing gels:

Component	1		2	
	Solids (%)	w/w (%)	Solids (%)	w/w (%)
"EMPIGEN"® CDL30J/35 (22%)	8	36.4	8	36.4
"EMPIGEN"® BB (30%)	8	26.7	8	26.7
"EMPICOL"® LB40 (40%)	4	7.5	3	7.5
"EMPICOL"® CVH (90%)	4	4	---	---
"EMPILAN"® KB2 (100%)	5.5	5.5	6	6
TRIETHANOLAMINE (100%)	1.1	1.1	---	---
CITRIC ACID	1	0.75	0.75	0.75
ETHYLENE DIAMINE TETRACETIC ACID	0.05	0.05	0.05	0.05
"KATHON"® CG (100%)	0.05	0.05	0.05	0.05
LIGHT MINERAL (100%)	14	14	20	20
WATER	---	Balance	---	Balance
TOTAL	**45.7**	**100**	**46.1**	**100**
Appearance	Clear Gel		Clear Gel	

The products in each case exhibited cubic symmetry and formed clear microemulsions or dilution with water or heating. The registered trade marks noted above have the following significance:-

"EMPICOL" CVH is a C_8 alkyl ether carboxylic acid
"EMPICOL" LB40 is a C_8 C_{10} alkyl sulphate
"EMPICOL" 0251/70J is a C_{12-14} alkyl 3 mole ethoxy sulphate
"EMPICOL" 9758 is a C_{10} alkyl sulphate
"EMPIGEN" BB is a C_{12-14} alkyl betaine
"EMPIGEN" CDL is coconut ampho acetate
"EMPILAN" KB2 is a C_{12-14} alkyl 2 mole ethoxylate
"EMPILAN" KB6 is a C_{12-14} alkyl 6 mole ethoxylate
"GLUCAPON" 215CS is a C_{8-10} alkyl polyclucoside D.P. 1.5
"KATHON" CG is a proprietary biocide

Exhibit 4

HUNTSMAN

Huntsman Surface Sciences UK Limited

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210 – 222 Hagley Road West
Oldbury
West Midlands B69 4XB

Telephone +44 (0) 121 429 6700
Facsimile +44 (0) 121 420 5700

Direct Tel +44 (0) 121 420 5431
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Date December 05, 2001
Your Ref 00945731.8
Our Ref MPD315/EP/PCT/ RGMS/SMSL1

**VIA FAX –
CONFIRMATION BY COURIER**

European Patent Office
Erhardtstrasse 27
D-80298 Munich
GERMANY

Dear Sirs

**ENTRY INTO REGIONAL PHASE
EUROPEAN PATENT APPLICATION NO. 00945731.8
APPLICANT : RHODIA CONSUMER SPECIALTIES LIMITED AND JOHNSON & JOHNSON CONSUMER COMPANIES INC
ASSIGNED TO HUNTSMAN INTERNATIONAL LLC**

We file herewith the following document sin respect of entry into the regional stand before the EPO under Chapter II PCT. The 30 month period from priority expires on 10 December 2001.

Form 1200
Voucher for payment of fees from our EPO Deposit Account Number : 28 05 03 16 and comprising

	DEM
Filing Fee	248.39
Designation Fees (18 x DEM 148.64)	2675.52
50% Examination Fee	1399.40
Claims Fee	78.23
	4401.54

Contd/.....

European Patent Office
Munich

December 05, 2001

We would advise that this Patent Application was part of the assets, which has now been sold to HUNTSMAN INTERNATIONAL LLC, a company incorporated in the state of Delaware had having its principal place of business at 500 Huntsman Way, Salt Lake City, Utah 84108, USA, and this was advised to you in our letter of August 14, 2001 (a copy of which is enclosed).

If you require any further information with regard to the above please do not hesitate to contact this office.

Yours faithfully
For and on behalf of
Huntsman Surface Sciences UK Limited

R G M SAVIDGE
Authorised Representative (GA43702)

Encs

Eintritt in die regi nale Phase vor dem EPA als Bestimmungsamt oder ausgewähltem Amt

Entry into the regional phase before the EPO as designated or elected Office

Entrée dans la phase régionale devant l'OEB agissant en qualité d'office désigné ou élu

Europäische Anmeldenummer oder, falls nicht bekannt, PCT-Aktenzeichen oder PCT-Veröffentlichungsnummer

European application number, or, if not known, PCT application or publication number

00945731.8

Numéro de dépôt de la demande de brevet européen ou, à défaut, numéro de dépôt PCT ou de publication PCT

Zeichen des Anmelders oder Vertreters (max. 15 Positionen)

Applicant's or representative's reference (max. 15 spaces)

MPD315/PCT/EP

Référence du demandeur ou du mandataire (15 caractères ou espaces au maximum)

☒ ☐

1. **Anmelder**
Die Angaben über den (die) Anmelder sind in der internationalen Veröffentlichung enthalten oder vom Internationalen Büro nach der internationalen Veröffentlichung vermerkt worden.

Änderungen, die das Internationale Büro noch nicht vermerkt hat, sind auf einem Zusatzblatt angegeben.

Zustellanschrift
(siehe Merkblatt II, 1)

1. **Applicant**
Indications concerning the applicant(s) are contained in the international publication or recorded by the International Bureau after the international publication.

Changes which have not yet been recorded by the International Bureau are set out on an additional sheet.

Address for correspondence
(see Notes II, 1)

AS IN 2

1. **Demandeur**
Les indications concernant le(s) demandeur(s) figurent dans la publication internationale ou ont été enregistrées par le Bureau international après la publication internationale.

Les changements qui n'ont pas encore été enregistrés par le Bureau international sont indiqués sur une feuille additionnelle.

Adresse pour la correspondance
(voir notice II, 1)

2. **Vertreter**

Name (Nur einen Vertreter angeben, der in das europäische Patentregister eingetragen und an den zugestellt wird)

Geschäftsanschrift

2. **Representative**

Name (Name only one representative who will be listed in the Register of European Patents and to whom notification will be made)

ROGER GORDON MADGWICK SAVIDGE

Address of place of business

Huntsman Surface Sciences UK Limited
210-222 Hagley Road West, Oldbury,
West Midlands B69 4XB ENGLAND

2. **Mandataire**

Nom (N'indiquer qu'un seul mandataire, qui sera inscrit au Registre européen des brevets et auquel signification sera faite)

Adresse professionnelle

Telefon

Telephone

+44 121 420 5430

Téléphone

Telefax Telex

Fax Telex

144 121 420 5437

Téléfax Télex

☐ Weitere(r) Vertreter auf Zusatzblatt

Additional representative(s) on additional sheet

Autre(s) mandataire(s) sur une feuille additionnelle

3. **Vollmacht**

☐ Einzelvollmacht ist beigefügt.

☐ Allgemeine Vollmacht ist registriert unter Nummer:

3. **Authorisation**

Individual authorisation is attached.

General authorisation has been registered under No:

GA43702

3. **Pouvoir**

Un pouvoir spécial est joint.

Un pouvoir général a été enregistré sous le n°:

☐ Allgemeine Vollmacht ist eingereicht, aber noch nicht registriert.

☐ Die beim EPA als PCT-Anmeldeamt eingereichte Vollmacht schließt ausdrücklich die regionale Phase ein.

A general authorisation has been filed, but not yet registered.

The authorisation filed with the EPO as PCT receiving Office expressly includes the regional phase.

Un pouvoir général a été déposé mais n'est pas encore enregistré

Le pouvoir général déposé à l'OEB agissant en qualité d'office récepteur au titre du PCT s'applique expressément à la phase régionale.

☐ **4. Prüfungsantrag**
Hiermit wird die Prüfung der Anmeldung gemäß Art. 94 EPÜ beantragt. Die Prüfungsgebühr wird (wurde) entrichtet.

Prüfungsantrag in einer zugelassenen Nichtamtssprache (siehe Merkblatt III, 6.2) :

4. Request for examination
Examination of the application under Art. 94 EPC is hereby requested. The examination fee is being (has been, will be) paid.

Request for examination in an admissible non-EPO language (see Notes III, 6.2)

4. Requête en examen
Il est demandé que soit examinée la demande de brevet conformément à l'art. 94 CBE. Il est (a été, sera) procédé au paiement de la taxe d'examen.

Requête en examen dans une langue non officielle autorisée (voir notice III, 6.2) :

☐ **5. Abschriften**
Zusätzliche Abschrift(en) der im ergänzenden europäischen Recherchenbericht angeführten Schriftstücke wird (werden) beantragt.

Anzahl der zusätzlichen Sätze von Abschriften

5. Copies
Additional copy (copies) of the documents cited in the supplementary European search report is (are) requested.

Number of additional sets of copies

5. Copies
Prière de fournir une ou plusieurs copie supplémentaire des documents cités dans le rapport complémentaire de recherche européenne.

Nombre de jeux supplémentaires de copies

6. Für das Verfahren vor dem EPA bestimmte Unterlagen

6.1 Dem Verfahren vor dem EPA als **Bestimmungsamt** (PCT I) sind folgende Unterlagen zugrunde zu legen:

☒ die vom Internationalen Büro vor **veröffentlichten Anmeldungsunterlagen** (mit allen Ansprüchen, Beschreibung und Zeichnungen), gegebenenfalls mit den geänderten Ansprüchen nach Art. 19 PCT

☐ soweit sie nicht ersetzt werden durch die **in drei Stücken** beigefügten **Änderungen.**

Falls nötig, sind Klarstellungen auf einem Zusatzblatt einzureichen!

6.2 Dem Verfahren vor dem EPA als **ausgewähltem Amt** (PCT II) sind folgende Unterlagen zugrunde zu legen:

☒ die dem **internationalen vorläufigen Prüfungsbericht zugrunde gelegten** Unterlagen, einschließlich seiner eventuellen **Anlagen**
(Solche Anlagen müssen immer in drei Stücken beigefügt werden)

☐ soweit sie nicht ersetzt werden durch die **in drei Stücken** beigefügten **Änderungen.**

Falls nötig, sind Klarstellungen auf einem Zusatzblatt einzureichen!

☒ Sind dem EPA als mit der internationalen vorläufigen Prüfung beauftragter Behörde **Versuchsberichte** zugegangen, dürfen diese dem Verfahren vor dem EPA zugrunde gelegt werden.

6. Documents intended for proceedings before the EPO

6.1 Proceedings before the EPO as **designated Office** (PCT I) are to be based on the following documents:

the **application documents published** by the International Bureau (with **all** claims, description and drawings), where applicable with amended claims under Art. 19 PCT

unless replaced by the **amendments** enclosed **in triplicate.**

Where necessary, clarifications must be submitted on a separate sheet!

6.2 Proceedings before the EPO as **elected Office** (PCT II) are to be based on the following documents:

the **documents on which the international preliminary examination** report is based, including its possible **annexes**
(Such annexes must always be filed in triplicate)

unless replaced by the **amendments** enclosed **in triplicate.**

Where necessary, clarifications must be submitted on a separate sheet!

If the EPO as International Preliminary Examining Authority has received **test reports**, these may be used as the basis of proceedings before the EPO

6. Pièces destinées à la procédure devant l'OEB

6.1 La procédure devant l'OEB agissant en qualité **d'office désigné** (PCT I) doit se fonder sur les pièces suivantes :

les pièces de la demande publiée par le Bureau international (avec **toutes les** revendications, la description et les dessins), éventuellement avec les revendications modifiées conformément à l'article 19 du PCT

dans la mesure où elles ne sont pas remplacées par les **modifications** jointes **en trois exemplaires.**

Le cas échéant, des explications doivent être jointes sur une feuille additionnelle!

6.2 La procédure devant l'OEB agissant **en qualité d'office élu** (PCT II) doit se fonder sur les pièces suivantes

les pièces sur lesquelles se fonde le rapport d'examen préliminaire international, y compris ses **annexes** éventuelles
(De telles annexes sont toujours à joindre en trois exemplaires)

dans la mesure où elles ne sont pas remplacées par les **modifications jointes en trois exemplaires.**

Le cas échéant, des explications doivent être jointes sur une feuille additionnelle!

Si l'OEB, agissant en qualité d'administration chargée de l'examen préliminaire international, a reçu des **rapports d'essais**, ceux-ci peuvent constituer la base de la procédure devant l'OEB

7. Übersetzungen
Beigefügt sind die nachfolgend angekreuzten Übersetzungen in einer der Amtssprachen des EPA (Deutsch, Englisch, Französisch):

7. Translations
Translations in one of the official languages of the EPO (English, French, German) are enclosed as crossed below:

7. Traductions
Vous trouverez, ci-joint, les traductions cochées ci-après dans l'une des langues officielles de l'OEB (allemand, anglais, français) :

- *Im Verfahren vor dem EPA als **Bestimmungsamt oder ausgewähltem Amt** (PCT I + II):*

☐ Übersetzung der **ursprünglich eingereichten internationalen Anmeldung** (Beschreibung, Ansprüche, etwaige Textbestandteile in den Zeichnungen), der veröffentlichten Zusammenfassung, und etwaiger Angaben über Mikroorganismen nach Regel 13[ter].3 und 13[ter].4 PCT, **in drei Stücken**

☐ Übersetzung der **prioritätsbegründenden Anmeldung(en), in einem Stück**

- *In proceedings before the EPO as **designated or elected Office** (PCT I + II):*

Translation of **the international application** (description, claims, any text in the drawings) as **originally filed**, of the abstract as published and of any indication under Rule 13[ter].3 and 13[ter].4 PCT regarding micro-organisms, **in triplicate**

Translation of **the priority application(s), in one copy**

- *Dans la procédure devant l'OEB agissant en qualité d'**office désigné ou élu** (PCT I + II):*

Traduction de la **demande internationale telle que déposée initialement** (description, revendications, textes figurant éventuellement dans les dessins), de l'abrégé publié, et de toutes indications visées aux règles 13[ter].3 et 13[ter].4 du PCT concernant les micro-organismes, **en trois exemplaires**

Traduction de la (des) **demande(s) ouvrant le droit de priorité, en un exemplaire**

- *Zusätzlich im Verfahren vor dem EPA als **Bestimmungsamt** (PCT I):*

☐ Übersetzung der nach Art. 19 PCT **geänderten Ansprüche** nebst Erklärung, falls diese dem Verfahren vor dem EPA zugrunde gelegt werden sollen (siehe Feld 6), **in drei Stücken**

- *In addition, in proceedings before the EPO as **designated Office** (PCT I):*

Translation of **amended claims** and any statement under Art. 19 PCT, if the claims as amended are to form the basis for the proceedings before the EPO (see Section 6), **in triplicate**

- *De plus, dans la procédure devant l'OEB agissant en qualité d'**office désigné** (PCT I) :*

Traduction des **revendications modifiées** et de la déclaration faite conformément à l'article 19 du PCT si la procédure devant l'OEB doit être fondée sur les revendications modifiées (voir la rubrique 6), **en trois exemplaires**

- *Zusätzlich im Verfahren vor dem EPA als **ausgewähltem Amt** (PCT II):*

☐ Übersetzung der **Anlagen zum internationalen vorläufigen Prüfungsbericht, in drei Stücken**

- *In addition, in proceedings before the EPO as **elected Office** (PCT II):*

Translation of any **annexes to the international preliminary examination report, in triplicate**

- *De plus, dans la procédure devant l'OEB agissant en qualité d'**office élu** (PCT II) :*

Traduction des **annexes du rapport d'examen préliminaire international, en trois exemplaires**

8. Biologisches Material
☐ Die Erfindung bezieht sich auf bzw verwendet biologisches Material, das nach Regel 28 EPÜ hinterlegt worden ist.

☐ Die **Angaben nach Regel 28(1)c) EPÜ** (falls noch nicht bekannt, die Hinterlegungsstelle und das (die) Bezugszeichen (Nummer, Symbole usw.) des Hinterlegers) sind in der internationalen Veröffentlichung oder in der gemäß Feld 7 eingereichten Übersetzung enthalten auf:

Seite(n) / Zeile(n)

_____

Die **Empfangsbescheinigung(en)** der Hinterlegungsstelle

☐ ist (sind) beigefügt:

☐ wird (werden) nachgereicht

☐ Verzicht auf die Verpflichtung des Antragstellers nach Regel 28(3) auf das beigefügte Schriftstück

8. Biological material
The invention relates to and/or uses biological material deposited under Rule 28 EPC

The **particulars referred to in Rule 28(1)(c) EPC** (if not yet known, the depository institution and the identification reference(s) (number, symbols etc.) of the depositor) are given in the international publication or in the translation submitted under Section 7 on:

page(s) / line(s)

_____

The **receipt(s) of deposit** issued by the depositary institution

is (are) enclosed

will be filed at a later date

Waiver of the right to an undertaking from the requestor pursuant to Rule 28(3) attached

8. Matière biologique
L'invention concerne et/ou utilise la matière biologique, déposée conformément à la règle 28 CBE.

Les **indications visées à la règle 28(1)c) CBE** (si pas encore connues l'autorité de dépôt et la (les) référence(s) d'identification (numéros, symboles etc.) du déposant) figurent dans la publication internationale ou dans une traduction produite conformément à la rubrique 7 à la / aux

page(s) / ligne(s)

_____

Le(s) **récépissé(s) de dépôt** délivré(s) par l'autorité de dépôt

est (sont) joint(s)

sera (seront) produit(s) ultérieurement

Renonciation, sur document distinct, à l'engagement du requérant au titre de la règle 28(3)

9. Nucleotid- und Aminosäuresequenzen

[ ] Die nach Regeln 5.2 und 13ter PCT sowie Regel 104b (3a) EPÜ erforderlichen Unterlagen liegen dem EPA bereits vor.

[ ] Das schriftliche Sequenzprotokoll wird anliegend in einer Amtssprache des EPA nachgereicht.

[ ] Das Sequenzprotokoll geht nicht über den Inhalt der Anmeldung in der ursprünglich eingereichten Fassung hinaus.

[ ] Der vorgeschriebene maschinenlesbare Datenträger ist beigefügt.

[ ] Die auf dem Datenträger gespeicherte Information stimmt mit dem schriftlichen Sequenzprotokoll überein.

9. Nucleotide and amino acid sequences

The items necessary in accordance with Rules 5.2 and 13ter PCT and Rule 104b (3a) EPC have already been furnished to the EPO.

The written sequence listing is furnished herewith in an official language of the EPO.

The sequence listing does not include matter which goes beyond the content of the application as filed.

The prescribed machine-readable data carrier is enclosed.

The information recorded on the data carrier is identical to the written sequence listing.

9. Séquences de nucléotides et d'acides aminés

Les pièces requises selon les règles 5.2 et 13ter PCT et la règle 104ter (3[illegible]) CBE ont déjà été déposées auprès de l'OEB.

La liste de séquences écrite est produite ci-joint dans une des langues officielles de l'OEB.

La liste de séquences ne contient pas d'éléments s'étendant au-delà du contenu de la demande telle qu'elle a été déposée.

Le support de données prescrit, déchiffrable par machine, est annexé.

L'information figurant sur le support de données est identique à celle que contient la liste de séquences écrite.

10. Benennungsgebühren / Designation fees / Taxes de désignation

10.1 Benennungsgebühren werden für nachstehende **in der internationalen Anmeldung bestimmte Vertragsstaaten des EPÜ** entrichtet.

10.1 Designation fees are paid in respect of the following EPC Contracting **States designated in the international application for a** European patent:

10.1 Les taxes de désignation sont acquittées pour ceux des **Etats contractants de la CBE désignés dans la demande internationale** qui sont indiqués ci-après:

[X]	AT	Österreich	Austria	Autriche
[X]	BE	Belgien	Belgium	Belgique
[X]	CH/LI	Schweiz und Liechtenstein	Switzerland and Liechtenstein	Suisse et Liechtenstein
[X]	CY	Zypern [1]	Cyprus [1]	Chypre [1]
[X]	DE	Deutschland	Germany	Allemagne
[X]	DK	Dänemark	Denmark	Danemark
[X]	ES	Spanien	Spain	Espagne
[X]	FI	Finnland	Finland	Finlande
[X]	FR	Frankreich	France	France
[X]	GB	Vereinigtes Königreich	United Kingdom	Royaume-Uni
[X]	GR	Griechenland	Greece	Grèce
[X]	IE	Irland	Ireland	Irlande
[X]	IT	Italien	Italy	Italie
[X]	LU	Luxemburg	Luxembourg	Luxembourg
[X]	MC	Monaco	Monaco	Monaco
[X]	NL	Niederlande	Netherlands	Pays-Bas
[X]	PT	Portugal	Portugal	Portugal
[X]	SE	Schweden	Sweden	Suède
[ ]	______	______ [2]	______ [2]	______ [2]
[ ]	______	______ [2]	______ [2]	______ [2]

[ ] 10.2 Derzeit ist nicht beabsichtigt, Benennungsgebühren für die in Feld 10.1 nicht angekreuzten, aber in der internationalen Anmeldung bestimmten Vertragsstaaten des EPÜ zu entrichten. Insoweit wird auf die Zustellung einer Mitteilung nach Regel 85a(1) EPÜ verzichtet. Sofern diese Benennungsgebühren nicht bis zum Ablauf der in Regel 85a(2) EPÜ vorgesehenen Nachfrist entrichtet werden, wird beantragt, von einer Mitteilung nach Regel 69(1) EPÜ abzusehen.

10.2 At present it is not intended to pay designation fees for the EPC Contracting States not marked with a cross under 10.1 but designated in the international application. No communication under Rule 85a(1) EPC in respect of these designation fees need be notified. If they have not been paid by the time the period of grace allowed in Rule 85a(2) EPC expires, it is requested that no communication be sent under Rule 69(1) EPC.

10.2 Il n'est pas actuellement envisagé d'acquitter les taxes de désignation pour les Etats contractants de la CBE qui ne sont pas cochés sous la rubrique 10.1, mais qui sont désignés dans la demande internationale. Le demandeur renonce ainsi à la notification prévue à la règle 85bis(1) CBE. Si ces taxes de désignation ne sont pas acquittées à l'expiration du délai supplémentaire prévu à la règle 85bis(2) CBE, il est demandé de s'abstenir d'envoyer une notification, établie conformément à la règle 69(1) CBE.

1) [illegible] in der internationalen Anmeldung [illegible] nach dem 1. April 1998 [illegible].
2) [illegible] für die Eintragung weiterer Vertragsstaaten [illegible] PCT oder des EPÜ [illegible] Drucklegung dieses Formblatts in Kraft [illegible] in der internationalen Anmeldung für ein [illegible] Patent bestimmt waren.

1) Only possible if designated in the international application on or after 1 April 199[illegible]
2) Space for any other EPC Contracting States which may become PCT or EPC Contracting States after this form has been printed and which were designated for a European patent in the international application.

1) Seulement [illegible] désignée dans la demande internationale [illegible] 1er avril 1998 ou après cette [illegible]
2) Prévu pour l'inscription d'autres Etats contractants de la CBE [illegible] desquels le PCT ou la CBE entrera [illegible] après l'impression du [illegible] formulaire [illegible] désignés dans la demande internationale pour un brevet européen.

☒ **11. Erstreckung des europäischen Patents**

Diese Anmeldung gilt auch als Erstreckungsantrag hinsichtlich aller in **der internationalen Anmeldung bestimmten Nicht-Vertragsstaaten des** EPÜ, mit denen bei Einreichung der internationalen Anmeldung »Erstreckungsabkommen« in Kraft waren*. **Die Erstreckung wird jedoch nur wirksam, wenn die vorgeschriebene Erstreckungsgebühr entrichtet wird.** Der Anmelder beabsichtigt, die Erstreckungsgebühr für die nachfolgend angekreuzten Staaten zu entrichten:

11. Extension of the European patent

This application is also considered as being a request for extension to all the **non-Contracting States to the EPC designated in the international application with which "extension agreements"** were in force on the date of filing the international application*. **However, the extension only takes effect if the prescribed extension fee is paid.** The applicant intends to pay the extension fee for the States marked with a cross below:

11. Extension des effets du brevet européen

La présente demande est également réputée demande d'extension à tous **les Etats non contractants de la CBE désignés dans la demande internationale**, avec lesquels existaient, lors du dépôt de la demande, des «accords d'extension»*. **Toutefois, l'extension ne produit ses effets que si la taxe d'extension prescrite est acquittée.** Le demandeur se propose actuellement d'acquitter la taxe d'extension pour les Etats dont le nom est coché ci-après.

☐	SI	Slowenien (* ab 1. März 1994)	Slovenia (* as of 1 March 1994)	Slovénie (* à compter du 1er mars 1994)
☐	LT	Litauen (* ab 5. Juli 1994)	Lithuania (* as of 5 July 1994)	Lituanie (* à compter du 5 juillet 1994)
☐	LV	Lettland (* ab 1. Mai 1995)	Latvia (* as of 1 May 1995)	Lettonie (* à compter du 1er mai 1995)
☐	AL	Albanien (* ab 1. Februar 1996)	Albania (* as of 1 February 1996)	Albanie (* à compter du 1er février 1996)
☐	RO	Rumänien (* ab 15. Oktober 1996)	Romania (* as of 15 October 1996)	Roumanie (* à compter du 15 octobre 1996)
☐	MK	Ehemalige jugoslawische Republik Mazedonien (* ab 1. November 1997)	Former Yugoslav Republic of Macedonia (* as of 1 November 1997)	Ex-République yougoslave de Macédoine (* à compter du 1er novembre 1997)
☐	____	____ 1)	____ 1)	____ 1)

1) Platz für Staaten, mit denen »Erstreckungsabkommen« nach Drucklegung dieses Formblatts in Kraft treten und die in der internationalen Anmeldung bestimmt waren

1) Space for States with which "extension agreements" enter into force after this form has been printed and which were designated in the international application

1) Place pour des Etats à l'égard desquels des «accords d'extension» entreront en vigueur après l'impression du présent formulaire et qui ont été désignés dans la demande internationale

☐ **12. Automatischer Abbuchungsauftrag** ***(Nur möglich für Inhaber von beim EPA geführten laufenden Konten)***

Das EPA wird beauftragt, nach Maßgabe der Vorschriften über das automatische Abbuchungsverfahren fällige Gebühren und Auslagen vom untenstehenden laufenden Konto abzubuchen.

Nummer des laufenden Kontos / Name des Kontoinhabers

12. Automatic debit order ***(for EPO deposit account holders only)***

The EPO is hereby authorised, under the Arrangements for the automatic debiting procedure, to debit from the deposit account below any fees and costs falling due.

Deposit account number / Account holder's name

12. Ordre de prélèvement automatique ***(uniquement possible pour les titulaires de comptes courants ouverts auprès de l'OEB)***

Par la présente, il est demandé à l'OEB de prélever du compte courant ci-dessous les taxes et frais venant à échéance, conformément à la réglementation relative au prélèvement automatique.

N° du compte courant / Nom du titulaire du compte

28 05 03 16 Huntsman Surface Sciences UK Limited

☐ **13.** Eventuelle Rückzahlungen auf das beim EPA geführte laufende Konto Nummer:

Name des Kontoinhabers

13. Reimbursement, if any, to EPO deposit account number

Account holder's name

13. Remboursements éventuels à effectuer sur le compte courant ouvert auprès de l'OEB numéro

Nom du titulaire du compte

14. Unterschrift(en) des (der) Anmelder(s) oder Vertreters

Ort / Datum

14. Signature(s) of applicant(s) or representative

Place / Date

14. Signature(s) du (des) demandeur(s) ou du mandataire

Lieu / Date

ROGER GORDON MADGWICK SAVIDGE
Oldbury, ENGLAND on 5 December 2001

Für Angestellte (Art. 133(3) EPÜ) mit allgemeiner Vollmacht:

Nr. ____________

For employees (Art. 133(3) EPC) having a general authorisation:

No. GA 43702

Pour les employés (art. 133(3) CBE) disposant d'un pouvoir général :

N° ____________

Name(n) des (der) Unterzeichneten bitte mit Schreibmaschine wiederholen. Bei juristischen Personen bitte auch die Stellung des (der) Unterzeichner(s) innerhalb der Gesellschaft eintragen.

Please type name(s) under signature(s). In the case of legal persons, the position of the signatory within the company should also be typed.

Veuillez faire figurer le nom dactylographié sous la signature. Si ce nom désigne une personne morale, la position qu'occupe le signataire au sein de la société doit être dactylographiée.

HUNTSMAN

Huntsman Surface Sciences UK Limited

P O Box 3
210 – 222 Hagley Road West
Oldbury
West Midlands B68 0NN

Telephone +44 (0) 121 429 6700
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Date	August 14, 2001
Direct Tel	+44 (0) 121 420 5430
Direct Fax	+44 (0) 121 420 5437
Your Ref	
Our Ref	ASSIGNMENTS

REGISTERED POST

European Patent Office
Erhardtstrasse 27
D-80298 Munich
GERMANY

Dear Sirs

ASSIGNMENT OF PATENT APPLICATIONS IN THE EPO & PCT FROM RHODIA CONSUMER SPECIALTIES LIMITED TO HUNTSMAN INTERNATIONAL LLC

I enclose herewith a Certified Copy of the Patent Assignment containing the EPO and PCT Applications, which have been assigned, to Huntsman International LLC; these have the Country Codes of "WO" and "EP".

I also enclose a copy of the Power of Attorney authorising the undersigned representative to file these papers on behalf Huntsman International LLC.

If you require any further information or documentation please do not hesitate to let me know.

Yours faithfully
For and on behalf of
Huntsman International LLC

R G M SAVIDGE
AUTHORISED REPRESENTATIVE (GA 43702)

Enc.

P.B. 5818 - Patentlaan 2
2280 HV Rijswijk (ZH)
☎ +31 70 340 2040
TX 31651 epo nl
FAX +31 70 340 3016

Europäisches Patentamt
Eingangsstelle

European Patent Office
Receiving Section

Office européen des brevets
Section de Dépôt

SAVIDGE, Roger, Gordon, Madgwick
Rhodia Consumer Specialties Limited
210-222 Hagley Road West
Oldbury
West Midlands B68 ONN

GRANDE BRETAGNE

COMPUTER RECORD ENTRY

Records Book oldest new

Datum/Date
02/01/01

Zeichen/Ref./Réf. MPD 315	Anmeldung Nr./Application No./Demande n°./Patent Nr./Patent No./Brevet n°. 00945731.8- -PCT/EP0005341

Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire
RHODIA CONSUMER SPECIALTIES LIMITED trading as ALB

ENTRY INTO THE EUROPEAN PHASE BEFORE THE EUROPEAN PATENT OFFICE

NOTE: These notes describes the procedural steps required for entry into the European phase before the European Patent Office (EPO). You are advised to read them carefully; failure to take the necessary action in time can lead to your application being deemed withdrawn.

ENTER EPO REGIONAL BY 10 DECEMBER 2001

1. European patent application no. 00945731.8 has been allotted to the above-mentioned international patent application.

2. Applicants WITHOUT a residence or their principal place of of business within the territory of an EPC Contracting State may themselves initiate European processing of their international application, provided they do so before expiry of the 21st or 31st month from the the priority date (see also point 7 below).

   During the European phase before the EPO as designated or elected Office, however, such applicants must be represented by a pro- professional representative (Articles 133(2) and 134(7) EPC).

   Procedural acts performed after expiry of the 21st or 31st month by a professional representative who acted during the international phase but is not authorised to act before the EPO have no legal effect and therefore lead to loss of rights.

   Please note that a professional representative authorised to act before the EPO and who acted for the applicant during the international phase does not automatically become the representative for the European phase. Applicants therefore strongly advised to appoint in good time any representative they wish to initiate the European phase for them; otherwise, the EPO has to send all communications direct to the applicant.

3. Applicants WITH a residence or their principal place of business within the territory of an EPC Contractin State are not obliged to appoint a professional representative authorised to act before the EPO for the European phase before the EPO as a designated or elected Office.
However, in view of the complexity of the procedure it is recommended that they do so.

4. Applicants and professional representatives are strongly advised to initiate the European phase using EPO Form 1200 (available free of charge from the EPO). This however is not compulsory.

5. TO ENTER THE EUROPEAN PHASE BEFORE THE EPO, the following acts must be performed. (NB: Failure validly to do so will entail loss of rights or other adverse legal consequences).

   5.1 If the EPO acting as DESIGNATED OFFICE under Article 22(1) PCT, applicants must, within 21 months from the date of filing or (where applicable) the earliest priority date:

   a) Supply a translation of the international application into an EPO official language, if the International Bureau did not publish the application in such a language (Article 22(1) PCT and Rule 107(1)a) EPC).
   If the translation is not filed in due time, the international application is deemed to be withdrawn before the EPO (Article 24(1)(iii) PCT).

   b) Pay the national basic fee and, where a supplementary European search report has to be drawn up, the search fee (Rule 107(1)c) and e) EPC).

   c) Within six months from publication of the international search report, pay a designation fee for each designated Contracting State (Rule 107(1)d) EPC), and file a written request for examination and pay the examination fee (Rule 107(1)f) EPC).

5.2 If the EPO is acting as ELECTED OFFICE under Article 39(1)a) PCT, applicants must, within 31 months from the date of filing or (where applicable) the earliest priority date:

a) File a translation as per 5.1 a) above.

b) Pay the fees as per 5.1 b) above.

c) If the time limit under Article 79(2) EPC expires before the 31-month time limit, pay the designation fee for each designated Contracting State (Rule 107(1)d) EPC).

d) If the time limit under Article 94(2) EPC expires before the 31-month time limit, file the written request for examination A N D pay the examination fee (Rule 107(1)f) EPC).

e) Pay the renewal fee for the third year, if it falls due before the expiry of the 21-month time limit (Rule 107(1)g) EPC)

5.3 If the application documents on which the European grant procedure is to be based comprise more then ten claims, a claims fee is payable within the time limit under Rule 107(1) EPC for the eleventh and each subsequent claim (Rule 110(1) EPC). The fee can however still be paid within a period of grace of one month from notification of an EPO communication (Rule 110(2) EPC).

6. If the necessary fees are not paid in time, they may still be validly paid within a period of grace of one month from notification of an EPO communication, subject to payment at the same time of a surcharge for each late-paid fee (Rule 85a(1), 85b EPC).
For the renewal fee, the period of grace is six months from the fee's due date (Article 86(2) EPC).

7. If the applicant had a representative during the application's international phase, the present notes will be sent to the representative, asking him to inform the applicant accordingly.

All subsequent communications will be sent to the applicant, or - if the EPO is informed of his appointment in time - to the applicants's European representative.

8. For more details about time limits and procedural acts before the EPO as designat d and elected Office, see the EPO brochure

How to get a European patent
Guide for applicants - Part 2
PCT procedure before the EPO - "EURO-PCT"

This brochure, the list of professional representatives before the EPO, Form 1200 and the latest fees are all on the internet under

http://www.european-patent-office.org.

RECEIVING SECTION

HUNTSMAN

Huntsman Surface Sciences UK Limited

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210 – 222 Hagley Road West
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West Midlands B68 0WA

Telephone +44 (0) 121 429 6700
Facsimile +44 (0) 121 420 5700

HUNTSMAN SURFACE SCIENCES UK LIMITED
CHANGE OF DETAILS
FROM 1 MARCH 2002

Dear Sirs

You will be aware that our postal address recently changed to :

PO Box 9792
210-222 Hagley Road West
Oldbury
West Midlands
B68 0WA
GREAT BRITAIN

If you have not yet implemented this change we would be grateful if you could update your records as soon as possible.

We would also inform you that with effect from 1 March 2002 our new telephone, and fax numbers will be as follows:

Main switchboard :		+44 121 420 5812
Direct Lines :	Mr R G M Savidge	+44 121 420 5868
	Mrs S M Stevenson	+44 121 420 5864
		+44 121 420 5802
Direct Fax :		+44 121 420 5806

We would be grateful if you would use our direct lines whenever possible.

Yours faithfully
For and on behalf of
Huntsman Surface Sciences UK Limited

MRS S M STEVENSON
PATENTS & TRADEMARKS ADMINISTRATOR

Exhibit 5

HUNTSMAN

Huntsman Surface Sciences UK Limited

P O Box 9761
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Date	January 30, 2002
Direct Tel	+44 (0) 121 420 5431
Direct Fax	+44 (0) 121 420 5437
Your Ref	2484658/mjc
Our Ref	MPD315/AU/ RGMS/SMSL1

VIA FAX –
CONFIRMATION BY POST

Davies Collison Cave
1 Little Collins Street
Melbourne, Victoria
AUSTRALIA 3000

Dear Sirs

AUSTRALIAN PATENT APPLICATION NO. 59716/00
"PERSONAL CARE FORMULATIONS"

I enclose the Report, as requested and confirm that no amendments have been made. The Applicant acquired its title form the first inventor by operation of UK law regarding the nature of his employment by the Applicant. I have asked the second Applicant to provide relevant details in respect of the second and third inventors.

Yours faithfully
For and on behalf of
Huntsman Surface Sciences UK Limited

R G M SAVIDGE
MANAGER, PATENTS & TRADMEARKS GROUP

Enc.

F[illegible]the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

by fax and post

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

To:

SAVIDGE, Roger, Gordon, Madgwick
Rhodia Consumer Specialties Limited
210-222 Hagley Road West
Oldbury
West Midlands B68 0NN
GRANDE BRETAGNE

Date of mailing *(day/month/year)*	10.10.01
Applicant's or agent's file reference: MPD315/PCT/RGMS	IMPORTANT NOTIFICATION

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/EP00/05341	09/06/2000	10/06/1999

Applicant

RHODIA CONSUMER SPECIALTIES LIMITED TRADING... et

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/	Authorized officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Hutterer, G Tel. +49 89 2399-6066

Form PCT/IPEA/416 (July 1992)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
MPD315/PCT/RGMS		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/EP00/05341	09/06/2000	10/06/1999
International Patent Classification (IPC) or national classification and IPC		
A61K7/00		
Applicant		
RHODIA CONSUMER SPECIALTIES LIMITED TRADING... et		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☒ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
27/12/2000	18.10.01
Name and mailing address of the international preliminary examining authority:	Authorized officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Progetter, M Telephone No. +49 89 2399 8719

Form PCT/IPEA/409 (cover sheet) (January 1994)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/05341

I. Basis of the report

1. With regard to the elements of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:
Description, pages:

1-25 as originally filed

Claims, No.:

1-5 as originally filed

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	
	No:	Claims	1-5
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-5
Industrial applicability (IA)	Yes:	Claims	1-5
	No:	Claims	

2. Citations and explanations
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

Re Item V

Reasoned statement under Article 35 (2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:

   D1: DE 14 67 825 A (CHESEBROUGH_PONDS INC.) 2 January 1969 (1969-01-02)

2.1. The subject-matter of present claim 1 is not new according to Article 33(2) PCT. Document D1 already describes compositions comprising water, mineral oil, oil soluble surfactants and hydrophilic surfactants.
The compositions of D1 are described as transparent mineral oil-water-gels. The main use of these gels is as a "Frisiermittel".
The subject-matter of claim 1 cannot be clearly delimited from the compositions described in D1. See also the PCT-Guidelines III-4.8.
Example 1 discloses a composition comprising 20% mineral oil, 15% surfactant with an HLB value of between 12.7 and 15.0, 10% surfactant with an HLB value of between 1.6 and 7.6. The ratio of oil to oil soluble surfactant is 2:1, the ratio of oils soluble to hydrophilic surfactant is 1:1.5.
It is stated that 60°C lies just above the l_1/L_1 transition temperature.

2.2. With regard to dependent claims 2-4 it is noted that a positive opinion can only be given, if dependent claims refer to independent claims that meet the requirements of the PCT.

3. The subject-matter of present claim 5 is not new according to Article 33(2) PCT. Document D1 describes a method for preparing compositions according to present claim 1 wherein mineral oil and the oil soluble surfactant are mixed and then a mixture of water and the hydrophilic surfactant is added. Water is added after the resulting mixture has been heated to a temperature above the "Gelpunkt" which is the l_1/L_1 transition temperature. A cooling step is implicit. (p.10, 3rd paragraph - p.11, 2nd paragraph).

Re Item VIII

Certain observations on the international application

1. The subject-matter of present claim 1 is not clear (Article 6 PCT).

1.1. The expression: "a proportion ..... based on the weight of ..." is not clear. Present claim 1 has been read as defining:

a) a proportion of from 8:1 to 1:5 of oil to oil soluble surfactant; and

b) a proportion of from 1:1 to 1:30 of oil soluble surfactant to hydrophilic surfactant.

This interpretation of claim 1 is based on p.11, 3rd paragraph.

1.2. The statement "adapted to form an I_1 phase having I_1/L_1 transition temperature greater than 25°C is not clear. Either the compounds comprised in the composition result in a composition with the defined effect, or an essential feature defining the claimed composition is missing.

At present, all compositions comprising the defined compounds in the described proportions are considered to be relevant.

Exhibit 6

SMART & BIGGAR
Intellectual Property & Technology Law

P.O. Box 2999, Station D
55 Metcalfe Street, Suite 900
Ottawa, Canada K1P 5Y6

Tel.: (613) 232-2486
Fax: (613) 232-8440

FEB 25 2002

To Fax No.: 732-524-2808

Page 1 of: 1

Attention: Paula Hein

From: Ron Ziola

Your file No.: see below

Reply to Ottawa file no.: 77414-103

Date: February 25, 2002

Time:

Johnson & Johnson
International Patent Law Division
P.O. Box 1222
New Brunswick, New Jersey 08903
U.S.A.

Dear Madam:

Re: Proposed Entry of Canadian National Phase of
PCT International Application
Serial No. PCT /EP00/05341
RHODIA CONSUMER SPECIALTIES LIMITED TRADING AS
ALBRIGHT & WILSON SURFACTANTS EUROPE AND
JOHNSON & JOHNSON CONSUMER COMPANIES, INC.
Kevan Hatchman, et al.
Your Ref: SPC0948

Thank you for your facsimile dated February 19, 2002.

The status of this case is that we are awaiting your instructions to proceed as per Sujata Barot..

Yours very truly
SMART & BIGGAR

Ron Ziola
Applications Supervisor

RZ:srm

If there are any transmission problems, please call (613) 232-2486.

Original copy and any enclosures ☐ will ☐ will not be sent by ☐ mail ☐ courier

Exhibit 7

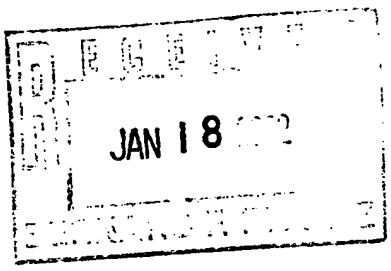
Ben was to tell to Joe. → Silicon

CONFIRMATION

FRISHAUF, HOLTZ, GOODMAN, LANGER & CHICK, P.C.
ATTORNEYS AT LAW
767 THIRD AVENUE, NEW YORK, N.Y. 10017-2023

SPC-995

Let file a C/P → TBP-529.



LEONARD HOLTZ
HERBERT GOODMAN
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ROBERT P. MICHAL

OF COUNSEL:
STEPHEN H. FRISHAUF
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TELEPHONE: (212) 319-4900
FACSIMILES:
GROUP 3: (212) 319-5101
GROUP 4: (212) 644-4834

WILLIAM R. WOODWARD
(1914-1994)

E-MAIL: MJCHICK@FHGLC.COM

January 15, 2002

VIA FACSIMILE - 1-732-524-5824

Mr. Bernie Plantz
JOHNSON & JOHNSON CONSUMER COMPANIES INC.
One Johnson & Johnson Plaza
New Brunswick, NJ 08933-7003

Re: National Phase of PCT/EP00/05341
U.S. Serial No. 10/018,238
Kevan HATCHMAN/HUNTSMAN INTERNATIONAL LLC and
JOHNSON & JOHNSON CONSUMER COMPANIES INC.
Huntsman Ref.: MPD315/US/RGMS/SMSL4
Our Ref. : 01795/HG

Dear Mr. Plantz:

I have left a number of telephone messages for you and other people at Johnson & Johnson; however, to date, I have no information for use in this matter. Apparently Huntsman International LLC and Johnson & Johnson Consumer Companies Inc. are to be the assignees of the subject application in the United States. The application has already been filed and has been granted a Serial No. 10/018,238. The next step requires a post-filed Declaration and Power of Attorney. Inventors from J&J are apparently Elvin LUKENBACH, Laura MCCULLOCH and Benjamin WIEGAND; at least these are the three inventors with United States residences. In addition, it is usual to send an assignment for signature at the same time. Finally, there is an issue as to where the invention was made. If it was made outside of the United States then there is no problem. If any part of the invention was made within the United States the facts should be considered and, if necessary, action taken so that a valid U.S. patent can issue.

We were originally referred to Erin Harriman, but she is apparently on medical leave. Her assistant Beth was able to provide me with some current addresses for the U.S. inventors.

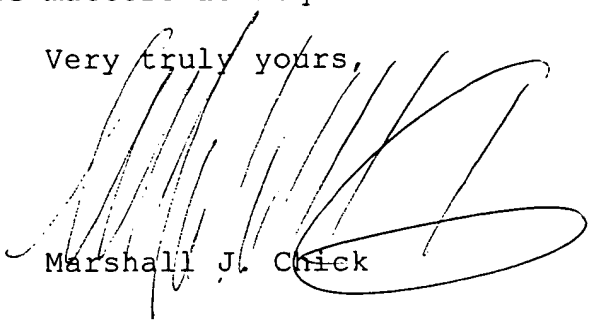
1. Concerning where the invention was made, I had received a call from a Jim Tracey who had indicated that he would get back to me in December. I have not heard anything further from him and my attempts to call him were unsuccessful. The only listing was apparently at a company called Vistacon and when I called that number I was directed to another person (I did not leave a telephone message). It is a fairly serious matter to file for a patent outside the United States when an invention is made, even in part, within the United States unless an export license is obtained. If reasonably prompt action is taken and there is a reasonable explanation, a retroactive license can be obtained. Otherwise a patent cannot issue in the United States.

2. With respect to the Assignment, the only address that I have for Johnson & Johnson Consumer Companies Inc. is the same address that I have for Huntsman International LLC. I would like to confirm that address or obtain a correct address so that I can complete the Assignment document.

3. Finally, is there a contact person to whom I can send the Declaration and Assignment for execution by the U.S. inventors.

Your assistance in these matters is requested.

Very truly yours,



Marshall J. Chick

MJC/ld

cc: Mr. Roger G.M. Savidge

Exhibit 8

FRISHAUF, HOLTZ, GOODMAN, LANGER & CHICK, P.C.
ATTORNEYS AT LAW

767 THIRD AVENUE, NEW YORK, N.Y. 10017-2023

LEONARD HOLTZ
HERBERT GOODMAN
THOMAS LANGER
MARSHALL J. CHICK
RICHARD S. BARTH
DOUGLAS HOLTZ
ROBERT P. MICHAL

OF COUNSEL:
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GROUP 4: (212) 644-4834

WILLIAM R. WOODWARD
(1914-1994)

E-MAIL: MJCHICK@FHGLC.COM

VIA EXPRESS MAIL

February 6, 2002

Wendy A. Choi, Esq.
Woodcock Washburn
One Liberty Place, 46th Floor
Philadelphia, PA 19103

Re: U.S. Serial No. 10/018,238
Kevan HATCHMAN, et al./HUNTSMAN INTERNATIONAL LLC and JOHNSON & JOHNSON CONSUMER COMPANIES INC.
Your Ref. : SPC-948 US
J&J Ref. : JJ-0107
Huntsman's Ref.: MPD315/US/RGMS/SMSL4
Our Ref. : 01795/HG

Dear Wendy:

Referring to our telephone discussion earlier today, I am enclosing a copy of the subject application and of some citations which were sent to us by Roger Savidge.

There are no outstanding deadlines at this time (however see the numbered paragraphs below).

1. As I explained during our earlier telephone discussions, it appears that a retroactive foreign filing license must be obtained if a valid U.S. patent is to issue in this case. You had indicated that you were going to obtain a time line as to when the inventions were made and other facts. I assume that the responsibility for pursuing the retroactive license has been transferred to you along with the responsibility for the application. Petitioning the Patent Office for retroactive license under 37 CFR 5.25 should be done as quickly as possible after you are able to confirm that one is required.

2. No inventor declarations have been filed. there should be a requirement for such a declaration with a two month term received shortly. We will forward the requirement to you as soon as it is received. We assume that the power of attorney and address for such documents will be to you.

3. No assignment documents were filed. (We usually send them with the declaration to be signed at the same time).

4. Should you want to prepare declaration and assignment documents before the official requirement is made, please note that we confirmed the serial number with a telephone call to the Patent Office.

Very truly yours,

MJC/ld
Encs.

Marshall J. Chick

RECEIPT ACKNOWLEDGED:

PCT National Phase Appln based on PCT/EP00/05341

Transmittal Letter Form PTO-1390 (in duplicate); Check No. 84229 for $890.00; PRELIMINARY AMENDMENT; INFORMATION DISCLOSURE STATEMENT, includ. FORM PTO-1449A; also enclosed: Copy of WO 00/76460 A2;Int'l. Search Report (PCT/ISA/210); PCT/IB/308; PCT/IB/304; REQUEST FOR PUBLICATION OF ASSIGNMENT INFORMATION; CHANGE OF CORRESPONDENCE ADDRESS APPLN.
Due Date: December 10, 2001 - MJC/ld

01795/HG - HATCHMAN et al -"PERSONAL CARE FORMULATIONS"

Express Mail Label No. EL 874 117 723 US
Date of Deposit: December 7, 2001

FORM PTO-1390 (REV 1-2001) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER: 01795/HG

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

U.S. APPLICATION NO. (If known, see 37 CFR 1.5):

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/EP00/05341	JUNE 9, 2000	JUNE 10, 1999

TITLE OF INVENTION: PERSONAL CARE FORMULATIONS

APPLICANT(S) FOR DO/EO/US: Kevan HATCHMAN, Elvin LUKENBACH, Laura MCCULLOCH and Benjamin WIEGAND

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. [ ] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. [ ] This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.
4. [X] The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. [X] A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. [X] is attached hereto (required only if not communicated by the International Bureau). (As WO 00/76460 A2)
   b. [X] has been communicated by the International Bureau.
   c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US).
6. [ ] An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
   a. [ ] is attached hereto.
   b. [ ] has been previously submitted under 35 U.S.C. 154(d)(4).
7. [ ] Amendments to the claims of the International Aplication under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. [ ] are attached hereto (required only if not communicated by the International Bureau).
   b. [ ] have been communicated by the International Bureau.
   c. [ ] have not been made; however, the time limit for making such amendments has NOT expired.
   d. [ ] have not been made and will not be made.
8. [ ] An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).
9. [ ] An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. [ ] An English lanugage translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 20 below concern document(s) or information included:

11. [X] An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. [ ] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. [X] A FIRST preliminary amendment.
14. [ ] A SECOND or SUBSEQUENT preliminary amendment.
15. [ ] A substitute specification.
16. [X] A change of power of attorney and/or address letter.
17. [ ] A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
18. [ ] A second copy of the published international application under 35 U.S.C. 154(d)(4).
19. [ ] A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
20. [X] Other items or information:

(i) Copy of WO 00/76460 A2
(ii) PCT/ISA/210 (Search Report)
(iii) PCT/IB/304 (Priority Document Sent)
(iv) PCT/IB/308 (Appln. sent to U.S.)
(v) REQUEST FOR PUBLICATION OF ASSIGNMENT INFORMATION

Express Mail Mailing Label No.: EL 874 117 723 US
Date of Deposit: December 7, 2001

I hereby certify that this paper is being deposited with the United States Postal Service 'Express Mail Post Office to Addressee' service under 37 CFR 1.10 on the date indicated above and is addressed to the Asst. Commissioner for Patents, Washington, D.C. 20231

Lorraine Dubois

Lorraine Dubois

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)	INTERNATIONAL APPLICATION NO. PCT/EP00/05341	ATTORNEY'S DOCKET NUMBER 01795/HG

21. [XX] The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):	CALCULATIONS PTO USE ONLY
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO $1040.00	
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO $890.00	
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO $740.00	
International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) $710.00	
International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) $100.00	
ENTER APPROPRIATE BASIC FEE AMOUNT =	$ 890.00
Surcharge of $130.00 for furnishing the oath or declaration later than [ ] 20 [ ] 30 months from the earliest claimed priority date (37 CFR 1.492(e)).	$ --

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	6 - 20 =	0	x $18.00	$ --
Independent claims	1 - 3 =	0	x $84.00	$ --
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ $280.00	$
TOTAL OF ABOVE CALCULATIONS =				$ 890.00
[ ] Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.			+	$ --
SUBTOTAL =				$ 890.00
Processing fee of $130.00 for furnishing the English translation later than [ ] 20 [ ] 30 months from the earliest claimed priority date (37 CFR 1.492(f)).			+	$ --
TOTAL NATIONAL FEE =				$ 890.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). $40.00 per property			+	$ --
TOTAL FEES ENCLOSED =				$ 890.00
			Amount to be refunded:	$
			charged:	$

a. [XX] A check in the amount of $890.00 to cover the above fees is enclosed.

b. [ ] Please charge my Deposit Account No. _____ in the amount of $ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. [XX] The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 06-1378. A duplicate copy of this sheet is enclosed.

d. [ ] Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

FRISHAUF, HOLTZ, GOODMAN LANGER & CHICK, P.C.
767 Third Avenue - 25th Floor
New York, NY 10017-2023

Tel. No. (212) 319-4900
Fax No. (212) 319-5101

01933
PATENT TRADEMARK OFFICE

SIGNATURE

MARSHALL J. CHICK
NAME

26,853
REGISTRATION NUMBER

Date: December 7, 2001

Attorney Docket No. 01795/HG

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Kevan HATCHMAN et al.

Serial No. : To be assigned (U.S. National Phase of PCT/EP00/05341 filed June 9, 2000)

Filed : CONCOMITANTLY HEREWITH

For : PERSONAL CARE FORMULATIONS

Art Unit :

Examiner :

Express Mail Mailing Label No.: EL 874 117 723 US
Dat of Deposit: December 7, 2001

I hereby certify that this paper is being deposited with the United States Postal Service "Express Mail Post Office t Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231

Laraine Dobies

Laraine Dobies

In the event that this Paper is late filed, and the necessary petition for extension of time is not filed concurrently herewith, please consider this as a Petition for the requisite extension of time, and to the extent not tendered by check attached hereto, authorization to charge the extension fee, or any other fee required in connection with this Paper to Account No. 06-1378.

ATTENTION BOX PCT

PRELIMINARY AMENDMENT FILED CONCOMITANT WITH NATIONAL PHASE PCT APPLICATION

Assistant Commissioner for Patents
Washington, D.C. 20231

S I R :

This is a PRELIMINARY AMENDMENT filed in the above-referenced national phase PCT application being filed concurrently herewith.

Please amend as follows:

IN THE SPECIFICATION:

Before the first paragraph of the specification insert the following paragraph: --This application is a U.S. National Phase Application under 35 USC 371 of International Application PCT/EP00/05341 (published in English) filed June 9, 1999.--

IN THE CLAIMS:

Cancel claim 4.

Add the following new claims 6 and 7:

6. (New) A composition according to claim 1 wherein the oil comprises at least 16% based on the weight of oil, of a mineral oil.

7. (New) A composition according to claim 3 wherein the oil comprises at least 16% based on the weight of oil, of a mineral oil.

REMARKS

Entry of this AMENDMENT and a favorable action on the merits are respectfully requested.

Respectfully submitted,

Frishauf, Holtz, Goodman,
Langer & Chick, P.C.
767 Third Ave., 25th Floor
New York, NY 10017-2023
Tel. No. (212) 319-4900
Fax No.: (212) 319-5101
MJC/ld

MARSHALL J. CHICK
Reg. No. 26,853

Attorney Docket No. 01795/HG

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Kevan HATCHMAN et al.

Serial No. : To be assigned (U.S. National Phase of PCT/EP00/05341 filed June 9, 2000)

Filed : CONCOMITANTLY HEREWITH

For : PERSONAL CARE FORMULATIONS

Art Unit :

Examiner :

Express Mail Mailing Label No.: EL 874 117 723 US
Date of Deposit: December 7, 2001

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Laraine Dobies

In the event that this Paper is lat filed, and the necessary petition for extension of time is not filed concurrently herewith, please consider this as a Petition for the requisite extension of time, and to the extent not tendered by check attached hereto, authorization to charge the extension fee, or any other fee required in connection with this Paper to Account No. 06-1378.

ATTENTION BOX PCT

INFORMATION DISCLOSURE STATEMENT FILED CONCOMITANT WITH NATIONAL PHASE PCT APPLICATION

ASSISTANT COMMISSIONER FOR PATENTS
Washington, D.C. 20231

S I R :

Submitted herewith are the following:

(1) Copy of International Search Report issued in the above-referenced PCT application;

(2) Copies of the cited publications are not enclosed herewith (this is a PCT national phase application);

and

(3) Substitute Form PTO-1449A. It is requested that an initialed copy of the form PTO-1449 be returned to indicate that the publications listed therein have been considered and made of record.

Each of the cited publications is considered relevant or material to the patentability of the present invention in view of the citation thereof in said communication and for the reasons stated in said communication. Said communication is in English.

This is being filed concurrently with the entry into the national phase and, therefore, is timely filed. No late fee is required.

It is therefore respectfully requested that the cited publications listed in the attached Substitute Form for PTO-1449A be considered and made "of record".

Respectfully submitted,

Frishauf, Holtz, Goodman,
Langer & Chick, P.C.
767 Third Ave., 25th Floor
New York, NY 10017-2023
Tel. No. (212) 319-4900
Fax No.: (212) 319-5101
MJC/ld

MARSHALL J. CHICK
Reg. No. 26,853

Please type a plus sign (+) inside this box → [+]

PTO/SB/08A (08-00)

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for Form 1449A/PTO				Application Number	
				Filing Date	Herewith
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				First Named Inventor	Kevan HATCHMAN et al.
				Gr up Art Unit	
				Examiner Name	
Sheet	1	of	2	Attorney Docket Number	01795/HG

U.S. PATENT DOCUMENTS

Exam. Inits*	Cite No¹	Document Number	Kind Code²	Name of Patentee or Applicant	Publication Date MM-DD-YYYY	Relevant Portion
		4,772,427 A		Dawson et al.	09-20-1988	
		5,756,108 A		Bruno et al.	05-26-1998	
		5,474,776 A		Hidenobu et al.	12-12-1995	

FOREIGN PATENT DOCUMENTS

Exam Inits*	Cite No¹	Office³	Document Number⁴	Kind Code⁵	Name of Patentee or Applicant	Publication Date MM-DD-YYYY	Relevant Portion	T⁶
		DE	14 67 825 A			01-02-1969		
		EP	0 490 053 A			06-17-1992		

Examiner Signature		Date Considered	

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² See kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Place a check here if English translation is attached.

DATE MAILED: December 7, 2001

Please type a plus sign (+) inside this box → [+]

PTO/SB/08B (08-00)

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for Form 1449A/PTO **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**				Application Number	
				Filing Date	CONCOMITANT HEREWITH
				First Named Inventor	Kevan HATCHMAN et al.
				Group Art Unit	
				Examiner Name	
Sheet	2	of	2	Attorney Docket Number	01795/HG

OTHER PRIOR ART - NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of author (in CAPITAL LETTERS), title of article, title of item, date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		PATENT ABSTRACTS OF JAPAN, vol. 1999, No. 06, March 31, 1999 of JP 08 143420 A, June 4, 1996 RODRIGUEZ, et al. "Cubic phase-based concentrated emulsions", J. COLLOID INTERFACE SCI. (2000), 223(2), pp. 197-204, XP 00979610	

Examiner Signature		Date Considered	

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] Unique citation designation number. [2] Place a check here if English translation is attached.

DATE MAILED: December 7, 2001

Attorney Docket No. 01795/HG

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Kevan HATCHMAN et al.

Serial No. : To be assigned (U.S. National Phase of PCT/EP00/05341 filed June 9, 2000)

Filed : CONCOMITANTLY HEREWITH

For : PERSONAL CARE FORMULATIONS

Art Unit :

Examiner :

Express Mail Mailing Label
No.: EL 874 117 723 US
Date of Deposit: December 7, 2001

I hereby certify that this paper is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231

Laraine Dobies

In the event that this Paper is late filed, and the necessary petition for extension of time is not filed concurrently herewith, please consider this as a Petition for the requisite extension of time, and to the extent not tendered by check attached hereto, authorization to charge the extension fee, or any other fee required in connection with this Paper to Account No. 06-1378.

ATTENTION BOX PCT

REQUEST FOR PUBLICATION OF ASSIGNMENT INFORMATION

ASSISTANT COMMISSIONER FOR PATENTS
Washington, D.C. 20231

S I R :

It is requested that the following assignment information be published as part of the 18-month publication of the present application:

HUNTSMAN INTERNATIONAL LLC and
JOHNSON & JOHNSON CONSUMER COMPANIES INC.

P.O. Box 9761
210-222 Hagley Road West
Oldbury
West Midlands, B69 4XB
ENGLAND

Respectfully submitted,

Frishauf, Holtz, Goodman,
Langer & Chick, P.C.
767 Third Ave., 25th Floor
New York, NY 10017-2023
Tel. No. (212) 319-4900
Fax No.: (212) 319-5101
MJC/ld

MARSHALL J. CHICK
Reg. No. 26,853

Please type a plus sign (+) inside this box → [+]

PTO/SB/122 (10-00)
Approved for use through 10/31/2002. OMB 0651-0035
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

CHANGE OF CORRESPONDENCE ADDRESS
Application

Address to:
Assistant Commissioner for Patents
Washington, D.C. 20231

Application Number	
Filing Date	Herewith
First Named Inventor	
Group Art Unit	
Examiner Name	
Attorney Docket Number	01795/HG

Please change the Correspondence Address for the above-identified application to:

[X] Customer Number [01933] → *Type Customer Number here*

01933
PATENT ,TRADEMARK OFFICE

OR

[ ] Firm *or* Individual Name	
Address	
Address	
City	State ZIP
Country	
Telephone	Fax

This form cannot be used to change the data asscciated with a Customer Number. To change the data associated with an existing Customer Number use "Request for Customer Number Data Change" (PTO/SB/124).

I am the :

[ ] Applicant/Inventor.

[ ] Assignee of record of the entire interest.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

[ ] Attorney or Agent of record.

[X] Registered practitioner named in the application transmittal letter in an application without an executed oath or declaration. See 37 CFR 1.33(a)(1). Registration Number 26,853

Typed or Printed Name	Marshall J. Chick, Reg. No. 26,853
Signature	
Date	December 7, 2001

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

[ ] *Total of ____ forms are submitted.

Burden Hour Statement: This form is estimated to take 3 minutes to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
21 December 2000 (21.12.2000)

PCT

(10) International Publication Number
WO 00/76460 A3

(51) International Patent Classification⁷: A61K 7/00, 7/06, 7/50, 7/48, C11D 17/00, 1/94, 3/18

(21) International Application Number: PCT/EP00/05341

(22) International Filing Date: 9 June 2000 (09.06.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
9913408.2 10 June 1999 (10.06.1999) GB

(71) Applicant *(for all designated States except US)*: RHODIA CONSUMER SPECIALTIES LIMITED trading as ALBRIGHT & WILSON SURFACTANTS EUROPE AND JOHNSON & JOHNSON CONSUMER COMPANIES INC [GB/GB]; 210-222 Halgey Road West, Oldbury, West Midlands B68 0NN (GB).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: HATCHMAN, Kevan [GB/GB]; 5 Byland Close, Friarscroft, Bromsgrove, Worcestershire B61 7PL (GB). LUKENBACH, Elvin [US/US]; 160 Klinesville Road, Flemington, NJ 08822 (US). MCCULLOCH, Laura [GB/US]; 18 Hampton Court 07920, Basking Ridge, NJ (US). WIEGAND, Benjamin [US/US]; 2028 Farmview Drive, Newton, PA 18940 (US).

(74) Agent: SAVIDGE, Roger, Gordon, Madgwick; Rhodia Consumer Specialties Limited, 210-222 Hagley Road West, Oldbury, West Midlands B68 0NN (GB).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *With international search report.*
— *Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.*

(88) Date of publication of the international search report:
25 May 2001

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PERSONAL CARE FORMULATIONS

(57) Abstract: Personal care compositions contain at least 20 % water, 10 to 40 % total surfactant and 2 to 40 % of oil, such as a mineral, fatty ester, glyceride, terpene or silicone oil wherein said surfactant comprises (a) an oil soluble surfactant having an HLB of from 2 to 10 in a proportion of from 8:1 to 1:5 based on the weight of oil and (b) a hydrophilic surfactant having an HLB greater than 11 in a weight proportion of from 1:1 to 1:30 based on the weight of (a), said water surfactant and oil being present in proportions adapted to form an I_1 phase having an I_1/L_1 transition temperature greater than 25 °C.

WO 00/76460 A3

INTERNATIONAL SEARCH REPORT

Int tional Application No
PCT/EP 00/05341

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61K7/00 A61K7/06 A61K7/50 A61K7/48 C11D17/00
C11D1/94 C11D3/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61K C11D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 14 67 825 A (CHESEBROUGH_PONDS INC.) 2 January 1969 (1969-01-02)	1-5
Y	page 1, paragraph 1 - paragraph 2 page 2, paragraph 3 page 3, paragraph 3 page 4, paragraph 4 -page 5, paragraph 1 page 9, paragraph 4 -page 11, paragraph 2 - examples claims	1-5
A	US 4 772 427 A (DAWSON ANDREW F ET AL) 20 September 1988 (1988-09-20) abstract column 3, line 21 - line 24 column 3, line 41 -column 4, line 5 column 4, line 22 - line 34 examples 1,3,4,7 claims	1-3

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 January 2001	14/03/2001

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016	Cielen, E

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Form PCT/ISA/210 (second sheet) (July 1992)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Present claims 1-5 relate to a composition and a method defined by reference to the parameter "an I1 phase having an I1/L1 transition temperature greater than 25 degrees C". The use of this parameter in the present context is considered to lead to a lack of clarity within the meaning of Article 6 PCT. It is impossible to compare the parameter the applicant has chosen to employ with what is set out in the prior art. The lack of clarity is such as to render a meaningful complete search impossible. Consequently, the search has been restricted to compositions having the properties of an I1 phase as described in the description (p. 1, par. 5, p. 5, par. 3 and 4, and p. 6, par. 2), namely compositions in the form of clear gels, ringing gels or having a visous isotropic or a "VI" phase or a cubic liquid crystalline phase, or being immobile, non-Newtonian, optically isotropic and transparent.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Im ational Application No
PCT/EP 00/05341

C.(Continuation) COCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 756 108 A (BIATRY BRUNO ET AL) 26 May 1998 (1998-05-26) abstract column 1, line 1 -column 2, line 16 column 2, line 63 -column 5, line 7 column 7, line 32 -column 8, line 4 examples 1,2,6 claims	1-5
A	US 5 474 776 A (KOYANAGI HIDENOBU ET AL) 12 December 1995 (1995-12-12) abstract column 2, line 4 - line 19 column 2, line 35 -column 5, line 30 table 3 examples 3,4 claims 1,2	1-3
A	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 06, 31 March 1999 (1999-03-31) & JP 08 143420 A (PROCTER &GAMBLE CO:THE), 4 June 1996 (1996-06-04) abstract	
A	EP 0 490 053 A (WELLA AG) 17 June 1992 (1992-06-17) abstract page 2, line 35 -page 3, line 56	1-3
P,Y	RODRIGUEZ, CARLOS ET AL: "Cubic phase -based concentrated emulsions" J. COLLOID INTERFACE SCI. (2000), 223(2), 197-204, XP000979610 abstract page 197, column 1, paragraph 2 -column 2, paragraph 4 figure 1 page 198, column 1, paragraph 5 page 199, column 1, paragraph 2 -page 200, column 1, paragraph 2 page 202, column 1, paragraph 1 -page 203, column 1, paragraph 1	1-5

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int ..tional Application No
PCT/EP 00/05341

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
DE 1467825	A	02-01-1969	IT	950501 B	20-06-1973
US 4772427	A	20-09-1988	AT	399654 B	26-06-1995
			AT	289988 A	15-11-1994
			AU	2100288 A	01-06-1989
			BE	1001545 A	28-11-1989
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			CH	678811 A	15-11-1991
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			DK	433988 A	02-06-1989
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			FI	883634 A,B,	02-06-1989
			FR	2623816 A	02-06-1989
			GB	2213160 A,B	09-08-1989
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			IE	61585 B	16-11-1994
			IT	1224719 B	18-10-1990
			JP	1153624 A	15-06-1989
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			NL	8802031 A	03-07-1989
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			AT	192645 T	15-05-2000
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			DE	59102434 D	08-09-1994
			ES	2042462 T	16-12-1993
			JP	4266811 A	22-09-1992
			US	5298240 A	29-03-1994

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
21 December 2000 (21.12.2000)

PCT

(10) International Publication Number
WO 00/76460 A3

(51) International Patent Classification[7]: A61K 7/00, 7/06, 7/50, 7/48, C11D 17/00, 1/94, 3/18

(21) International Application Number: PCT/EP00/05341

(22) International Filing Date: 9 June 2000 (09.06.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
9913408.2 10 June 1999 (10.06.1999) GB

(71) Applicant *(for all designated States except US)*: RHODIA CONSUMER SPECIALTIES LIMITED trading as ALBRIGHT & WILSON SURFACTANTS EUROPE AND JOHNSON & JOHNSON CONSUMER COMPANIES INC [GB/GB]; 210-222 Halgey Road West, Oldbury, West Midlands B68 0NN (GB).

(72) Inventors; and
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(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
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(88) Date of publication of the international search report:
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WO 00/76460 A3

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INTERNATIONAL SEARCH REPORT

Int tional Application No
PCT/EP 00/05341

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61K7/00 A61K7/06 A61K7/50 A61K7/48 C11D17/00
C11D1/94 C11D3/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61K C11D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	page 1, paragraph 1 - paragraph 2 page 2, paragraph 3 page 3, paragraph 3 page 4, paragraph 4 -page 5, paragraph 1 page 9, paragraph 4 -page 11, paragraph 2 examples claims	1-5

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 January 2001	14/03/2001

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016	Cielen, E

3

Form PCT/ISA/210 (second sheet) (July 1992)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Present claims 1-5 relate to a composition and a method defined by reference to the parameter "an I1 phase having an I1/L1 transition temperature greater than 25 degrees C". The use of this parameter in the present context is considered to lead to a lack of clarity within the meaning of Article 6 PCT. It is impossible to compare the parameter the applicant has chosen to employ with what is set out in the prior art. The lack of clarity is such as to render a meaningful complete search impossible. Consequently, the search has been restricted to compositions having the properties of an I1 phase as described in the description (p. 1, par. 5, p. 5, par. 3 and 4, and p. 6, par. 2), namely compositions in the form of clear gels, ringing gels or having a visous isotropic or a "VI" phase or a cubic liquid crystalline phase, or being immobile, non-Newtonian, optically isotropic and transparent.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 00/05341

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 756 108 A (BIATRY BRUNO ET AL) 26 May 1998 (1998-05-26) abstract column 1, line 1 -column 2, line 16 column 2, line 63 -column 5, line 7 column 7, line 32 -column 8, line 4 examples 1,2,6 claims	1-5
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A	EP 0 490 053 A (WELLA AG) 17 June 1992 (1992-06-17) abstract page 2, line 35 -page 3, line 56	1-3
P,Y	RODRIGUEZ, CARLOS ET AL: "Cubic phase -based concentrated emulsions" J. COLLOID INTERFACE SCI. (2000), 223(2), 197-204, XP000979610 abstract page 197, column 1, paragraph 2 -column 2, paragraph 4 figure 1 page 198, column 1, paragraph 5 page 199, column 1, paragraph 2 -page 200, column 1, paragraph 2 page 202, column 1, paragraph 1 -page 203, column 1, paragraph 1	1-5

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int .tional Application No
PCT/EP 00/05341

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 1467825 A	02-01-1969	IT 950501 B	20-06-1973
US 4772427 A	20-09-1988	AT 399654 B	26-06-1995
		AT 289988 A	15-11-1994
		AU 2100288 A	01-06-1989
		BE 1001545 A	28-11-1989
		BR 8803939 A	13-03-1990
		CA 1315637 A	06-04-1993
		CH 678811 A	15-11-1991
		DE 3839349 A	15-06-1989
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		GB 2213160 A,B	09-08-1989
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		LU 87321 A	08-03-1989
		MX 163643 B	10-06-1992
		NL 8802031 A	03-07-1989
		NO 173555 C	29-12-1993
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		ZA 8805794 A	25-04-1990
US 5756108 A	26-05-1998	FR 2726762 A	15-05-1996
		AT 192645 T	15-05-2000
		CA 2162520 A	11-05-1996
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		DE 69516803 T	07-12-2000
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		ES 2146299 T	01-08-2000
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US 5474776 A	12-12-1995	JP 2736486 B	02-04-1998
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		DE 59102434 D	08-09-1994
		ES 2042462 T	16-12-1993
		JP 4266811 A	22-09-1992
		US 5298240 A	29-03-1994

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION CONCERNING SUBMISSION OR TRANSMITTAL OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

SAVIDGE, Roger, Gordon, Madgwick
Rhodia Consumer Specialties Limited
210-222 Hagley Road West
Oldbury
West Midlands B68 0NN
ROYAUME-UNI

Date of mailing (day/month/year) 18 October 2000 (18.10.00)	
Applicant's or agent's file reference MPD315/PCT/RGMS	**IMPORTANT NOTIFICATION**
International application No. PCT/EP00/05341	International filing date (day/month/year) 09 June 2000 (09.06.00)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 10 June 1999 (10.06.99)
Applicant RHODIA CONSUMER SPECIALTIES LIMITED et al	

1. The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
2. This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.
3. An asterisk(*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
4. The letters "NR" appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

Priority date	Priority application No.	Country or regional Office or PCT receiving Office	Date of receipt of priority document
10 June 1999 (10.06.99)	9913408.2	GB	09 Augu 2000 (09.08.00)

The International Bureau of WIPO
34, chemin des C l mbettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer

Athina Nickitas-Etienne

Telephone No. (41-22) 338.83.38

PATENT COOPERATION TREATY

1 Fax copy to JZ 21/12/00

From the INTERNATIONAL BUREAU

PCT

2 File Middle

NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:
SAVIDGE, Roger, Gordon, Madgwick
Rhodia Consumer Specialties Limited
210-222 Hagley Road West
Oldbury
West Midlands B68 0NN
ROYAUME-UNI

Date of mailing (day/month/year) 21 December 2000 (21.12.00)	
Applicant's or agent's file reference MPD315/PCT/RGMS	IMPORTANT NOTICE

International application No.	International filing date (day/month/year)	Priority date (day/month/year)
PCT/EP00/05341	09 June 2000 (09.06.00)	10 June 1999 (10.06.99)

Applicant: RHODIA CONSUMER SPECIALTIES LIMITED trading as ALBRIGHT & WILSON SURFACTANTS EUROPE AND JOHNSON & JO et al

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:
   AG,AU,DZ,KP,KR,MZ,US

   In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:
   AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CN,CR,CU,CZ,DE,DK,DM,EA,EE,EP,ES,FI,GB,GD,
   GE,GH,GM,HR,HU,ID,IL,IN,IS,JP,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MA,MD,MG,MK,MN,MW,MX,
   NO,NZ,OA,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,TZ,UA,UG,UZ,VN,YU,ZA,ZW
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If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

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(54) Title: PERSONAL CARE FORMULATIONS

(57) Abstract: Personal care compositions contain at least 20 % water, 10 to 40 % total surfactant and 2 to 40 % of oil, such as a mineral, fatty ester, glyceride, terpene or silicone oil wherein said surfactant comprises (a) an oil soluble surfactant having an HLB of from 2 to 10 in a proportion of from 8:1 to 1:5 based on the weight of oil and (b) a hydrophilic surfactant having an HLB greater than 11 in a weight proportion of from 1:1 to 1:30 based on the weight of (a), said water surfactant and oil being present in proportions adapted to form an I_1 phase having an I_1/L_1 transition temperature greater than 25 °C.

PERSONAL CARE FORMULATIONS

The present invention relates to shampoo or cleaning compositions suitable for personal care applications in the form of I_1 mesophase systems containing dispersed oil.

Dispersing oil in aqueous shampoo and body wash formulations has presented problems. To prevent the oil phase separating it must either be: (A) emulsified which involves dispersing the oil as colloidal single droplets; (B) microemulsified which involves forming a micellar solution with oil incorporated into surfactant micelles; (C) suspended in a structured surfactant system which typically comprises a dispersion of a surfactant mesophase in aqueous electrolyte; or (D) incorporated into a water soluble solid, pasty or gelatinous composition.

With the exception of microemulsions which are clear, thermodynamically stable, micellar solutions, the foregoing systems are necessarily opaque and contain the oil dispersed in a relatively coarse form, which does not deposit satisfactorily on skin or hair.

However microemulsions are difficult to formulate using the surfactants which are most effective in body wash and other personal care formulations and contain relatively low concentrations of surfactant.

We have now discovered that oil may be stably incorporated into the structure of an I_1 phase to form a clear gel-like composition which contains higher concentrations of surfactant and oil than conventional microemulsions, but which dissolves in water to form a microemulsion. The novel oil-in-I_1 compositions also form microemulsions on heating.

Surfactants are known to form mesophases or liquid crystal phases at concentrations above approximately 30% by weight based on the weight of water and surfactant. Mesophases are phases which exhibit a degree of order intermediate between typical liquids and solids. Generally mesophases combine long range order associated with crystals, with fast molecular motion common to liquids.

The formation of detergent mesophases is well documented. Different surfactants and surfactant mixtures differ widely in their ability to form the numerous different mesophases, and in respect of the conditions of concentration and temperature at which they are formed. For a typical surfactant of the type normally used in cleaning products the following mesophases are usually observed. The concentrations given are illustrative only and may vary considerably from one surfactant or surfactant mixture to the next.

Below approximately 30% surfactant an isotropic L_1 phase is formed (with micelles of surfactant in water). Above 30% surfactant many detergents form a M phase which is not normally used in personal care applications since it dos not show suitable flow characteristics and is difficult to dissolve or disperse in water. Above the concentrations required to form an M phase, but usually at concentrations of less than 80% active surfactant, i.e. 60%-80% a G-phase is formed. At concentrations higher than those required to form a G-phase, i.e. typically greater than 80% active surfactant, most surfactants form a hydrated solid, and some, especially non-ionic surfactants form a liquid phase containing dispersed micelle sized droplets of water - an inverted micellar solution known as an L_2 phase. L_2 detergent systems do not disperse readily in water and have a tendency to form undesirable gels, e.g. M phases, on dilution.

Some surfactants form viscous isotropic or VI phases. These are immobile phases usually with a vitreous appearance, and have been relatively little studied compared to the other phases discussed above. They have been virtually ignored in the context of formulating cleaning compositions because most of the surfactants and surfactant systems which are commonly used in cleaning compositions do not form VI phases. at least at

normal temperatures, or form them only within narrow concentration ranges and because their known properties as immobile gels has deterred formulators from investigating them. They are recognised as being the most viscous of the lyotropic mesophases.

The different surfactant phases can be recognised by a combination of appearance, rheology, textures under the microscope, electron microscopy and x-ray diffraction or neutron scattering. A detailed description, with illustrations, of the difference textures observable using a polarising microscope, is to be found in the paper by Rosevear JAOCS Vol 31, p628.

The following terms may require explanation or definition:

The "hydrophilic: lipophilic balance", or "HLB" value is used as a measure of the relative affinities of the surfactants for water and oil respectively and correlates with their effectiveness as emulsifiers. HLB value can easily be calculated for alcohol ethoxylates since it is one fifth of the weight percent of ethylene oxide based on the total mole weight. Other surfactants can be assigned equivalent values by applying more complicated formulae or by measuring their relative affinity for water and oil. An HLB value of 20 represents a completely water soluble oil insoluble surfactant, while an HLB value of 0 represents a completely oil soluble and water insoluble surfactant.

"Optically isotropic" surfactant phases do not normally tend to rotate the plane of polarisation of plane polarised light. If a drop of sample is placed between two sheets of optically plane polarising material whose planes are at right angles, and light is shone on to one sheet, optically isotropic surfactant samples do not appear substantially brighter than their surrounding when viewed through the other sheet. Optically anisotropic materials appear substantially brighter. Optically anisotropic mesophases typically show characteristic textures when viewed through a microscope between crossed polarisers, whereas optically isotropic phases usually show a featureless continuum.

"Newtonian liquids" have a viscosity which remains constant at different shear rates. For the purpose of this specification, liquids are considered Newtonian if the viscosity does not vary substantially at shear rates up to 1000 sec^{-1}.

"Lamellar" phases are phases which comprise a plurality of bilayers of surfactant arranged in parallel and separated by liquid medium. They include both solid phases and the typical form of the liquid crystal G-phase. G-phases are typically pourable, non-Newtonian, anisotropic products. They are typically viscous-looking, opalescent materials with a characteristic "smeary" appearance on flowing. They form characteristic texture under the polarising microscope and freeze fractured samples have a lamellar appearance under the electron microscope. X-ray diffraction or neutron scattering similarly reveal a lamellar structure, with a principal peak typically between 4 and 10nm, usually 5 to 6nm. Higher order peaks, when present occur at double or higher integral multiples of the Q value of the principal peak. Q is the momentum transfer vector and is related, in the case of lamellar phases, to the repeat spacing d by the equation $Q=\frac{2n}{d}$ [pi] where n is the order of the peak.

G-phases, however, can exist in several different forms, including domains of parallel sheets which constitute the bulk of the typical G-phases described above and spherulites formed from a number of concentric spheroidal shells, each of which is a bilayer of surfactant. In this specification the term "lamellar" will be reserved for compositions which are at least partly of the former type. Opaque compositions at least predominantly of the latter type in which the continuous phase is a substantially isotropic solution containing dispersed spherulites are referred to herein as "G-phase compositions". G-phases are sometimes referred to in the literature as $L_{(alpha)}$ phases.

L_1-phases are mobile, optically isotropic, and typically Newtonian liquids which show no texture under the polarising microscope. Electron microscopy is capable of resolving the texture of such phases only at very high magnifications, and X-ray or neutron scattering normally gives only a single broad peak typical of a liquid structure, at very small angles

close to the reference beam. The viscosity of an L_1-phase is usually low, but may rise significantly as the concentration approaches the upper phase boundary.

"M-phases" are typically immobile, anisotropic products resembling low melting point waxes. They give characteristic textures under the polarising microscope, and a hexagonal diffraction pattern by X-ray or neutron diffraction which comprises a major peak, usually at values corresponding to a repeat spacing between 4 and 10nm, and sometimes higher order peaks, the first at a Q-value which is $3^{0.5}$ times the Q-value of the principal peak and the next double the Q-value of the principal peak. M-phases are sometimes referred to in the literature as H-phases.

The viscous isotropic or "VI" phases are typically immobile, non-Newtonian, optically isotropic and are typically transparent, at least when pure. VI phases have a cubic symmetrical diffraction pattern, under X-ray diffraction or neutron scattering, with a principal peak and higher order peaks at $2^{0.5}$ and $3^{0.5}$ times the Q-value of the principal peak.

These cubic liquid crystalline phases are sometimes observed immediately following the micellar phase at ambient temperature as the concentration of surfactant is increased. It has been proposed that such VI phases, sometimes referred to as I_1 phase, may arise from the packing of micelles (probably spherical) in a cubic lattice. At ambient temperature a further increase in surfactant concentration usually results in hexagonal phase (M_1), which may be followed by a lamellar phase (G). I_1 phases, when they occur, are usually only observed over a narrow range of concentrations, typically just above those at which the L_1-phase is formed. The location of such VI phases in a phase diagram suggests that the phase is built up of small closed surfactant aggregates in a water continuum.

An inverse form of the I_1 phase (the I_2 phase) has also been reported, possibly between the inverse hexagonal (M_2) and L_2 phases. It consists of a surfactant continuum containing a cubic array of inverted micelles. An alternative form of the VI phase called

the V_1 phase has been observed at concentrations between the M and G phases and may comprise a bicontinuous system. This may exhibit an even higher viscosity than the I_1. An inverse phase, the V_2 phase, between the G and M_2 phases has also been postulated.

VI phases are typically examples of "ringing gels". When a jar or beaker containing such a phase is sharply struck, a distinctive vibration can be felt in the composition.

The I_1/L_1 transition temperature will be referred to herein as the melting point of the I_1 phase for convenience, although it is not strictly speaking the melting point since the VI phases are not solids.

All references herein to the formation or existence of specific phases or structures are to be construed, unless the context requires otherwise, as references to their formation or existence at 20°C.

Hexagonal gels (M-phase) have been referred to in the prior art as cleaning compositions, e.g. GB 2 179 055, EP I 153 837 and colloidal gels formed with gelling agents such as synthetic polymers or gelatin have also been suggested, e.g. US 4 465 663.

However these compositions cannot be readily dissolved in water to form microemulsions. They are moreover usually opaque and of an unattractive appearance and often require the presence of solvents such as glycols which add to the cost and are environmentally undesirable.

The use of a type of ringing gel to suspend oil for cosmetic or pharmaceutical applications was described in US 4 026 818 but the formulation requires the presence of hydroxylic solvents and utilises a surfactant system which is unsuitable for shampoo applications. EP O 598 335 describes the use of various cubic phases including I_1 phases as laundry prespotters and for other cleaning formulations. If does not suggest how such phases could be used to suspend oil or form microemulsions. Normally attempts to

suspend oil in surfactant mesophases result in coarse droplets of oil being suspended in the aqueous phase of a structured surfactant.

Our invention provides a concentrated personal cleansing composition comprising, by weight of the composition, at least 20% water, 10 to 40% total surfactant and 2 to 40% of oil, such as a mineral, fatty ester, glyceride, terpene or silicone oil wherein said surfactant comprises (A) an oil soluble surfactant having an HLB of from 2 to 10 in a proportion of from 8:1 to 1:5 based on the weight of oil and (B) a hydrophilic surfactant having an HLB greater than 11, in a weight proportion of from 1:1 to 1:30 based on the weight of (A), said surfactant water and oil being present in proportions adapted to form an I_1 phase having an I_1/L_1 transition temperature greater than 25°C.

The surfactants are preferably selected to provide an I_1 phase over a comparatively broad surfactant concentration range e.g. more than ± 5% or greater, which range typically lies above 15% by weight total surfactant based on the weight of the composition e.g. between 20% and 40% by weight surfactant usually between 25% and 60%.
The surfactants are preferably selected to provide an I_1 phase which melts above 30°C e.g. above 35°C, most preferably above 40°C. Preferably the I_1 phase melts at a temperature substantially below 100°C, e.g. below 90°C, more preferably below 80°C, most preferably below 70°C, especially below 60°C, typically below 55°C, usually below 50°C.

The surfactant mixture preferably has a mean HLB based on the molar proportions of the components between 10 and 15 e.g. 11 to 14. The surfactants preferably comprise non-ionic surfactants such as ethoxylated alcohols. It has been found that highly ethoxylated fatty alcohols, e.g. more than 10 EO groups, preferably more than 15 EO groups, especially 18 to 50 EO groups form I_1 phases particularly readily.

Other non-ionic surfactants which may be present include:-

alkyl phenol ethoxylates, fatty acid ethoxylates, fatty acid monoalkylolamide ethoxylates, fatty alcohol propoxylates, fatty anime alkoxylates and fatty acid glyceryl ester ethoxylates. Other non-ionic compounds suitable for inclusion in compositions of the present invention include mixed ethylene oxide propylene oxide block copolymers, low relative molecular mass polyethylene glycols e.g. PEG600 and PEG200, ethylene glycol monoesters, amine oxides and alkyl polyglycosides, alkyl sugar esters including alkyl sucrose esters and alkyl oligosaccharide ester, alkyl capped polyvinyl alcohol and alkyl capped polyvinyl pyrrolidone.

Compositions of the invention may also comprise anionic surfactants, in addition to or instead of non-ionic surfactants. Anionic surfactant may comprise a C_{10-20} alkyl benzene sulphonate or an alkyl ether sulphate which is preferably the product obtained by ethoxylating a natural fatty or synthetic C_{10-20} e.g. a C_{12-14} alcohol with from 1 to 20, preferably 2 to 10 e.g. 3 to 4 ethyleneoxy groups, optionally stripping any unreacted alcohol, reacting the ethoxylated product with a sulphating agent and neutralising the resulting alkyl ether sulphuric acid with a base. The term also includes alkyl glyceryl sulphates, and random or block copolymerised alkyl ethoxy/propoxy sulphates.

The anionic surfactant may also comprise, for example, C_{10-20} e.g. C_{12-18} alkyl sulphate.

The surfactant may comprise a C_{8-20} e.g. C_{10-20} aliphatic soap. The soap may be saturated or unsaturated, straight or branched chain.

Preferred examples include dodecanoates, myristates, stearates, oleates, linoleates, linoleates and palmitates and coconut and tallow soaps.

The surfactant may include other anionic surfactants, such as olefin sulphonates, paraffin sulphonates, taurides, isethionates, ether sulphonates, ether carboxylates, aliphatic ester sulphonates e.g. alkyl glyceryl sulphonates, sulphosuccinates or sulphosuccinamates.

The cation of any anionic surfactant is typically sodium but may alternatively be potassium, lithium, calcium, magnesium, ammonium, or an alkyl ammonium having up to 6 aliphatic carbon atoms including isopropyl ammonium, monoethanol ammonium, diethanol ammonium, and triethanol ammonium.

Ammonium and ethanol ammonium salts are generally more soluble than the sodium salts. Mixtures of the above cations may be used.

The composition may contain amphoteric surfactants such as betaines sulphobetaines, amido betaines or imidazoline betaines.

The I_1 phase may be conveniently prepared by mixing the oil and oil soluble surfactant and adding sufficient water to the water soluble surfactant to maintain a lamellar phase. The oil and oil soluble surfactant may be stirred into the lamellar composition at elevated temperature, above the melting point of the desired I_1 phase. The composition is then diluted with hot water until a microemulsion is formed and then cooled to solidify it into the I_1 phase.

The oil is preferably a mineral oil (e.g. a low molecular weight petroleum ether having, for example, a boiling point below 120°C e.g. below 100°C especially below 80°C) or a lower molecular weight fatty ester (e.g. one having less than 25 carbon atoms) such as isopropyl esters of lauric isostearic or palmitic acids or their ethyl analogues. Other oils, including higher mol weight fatty esters, e.g. oleyl oleate, fatty glycerides, terpene oils such as limonene or silicone oils may present difficulties in providing clear compositions. Such oils can nevertheless be incorporated in clear formulations by blending with sufficient mineral oil (preferably low molecular weight mineral oil). The amount required varies according to the nature of the oil. Typically the blend contains at least 16%, based on the total weight of oil, of the mineral oil, especially 30 to 80%, typically 40 to 60%. Particularly preferred are vegetable oils such as coconut, evening primrose, groundnut, meadow foam, apricot kernel, peach kernel, avocado, jojoba and olive oil.

Oil soluble cosmetic or topical pharmaceutical ingredients may be dissolve in the oil including antiseptics, styptics, antidandruff agents such as zinc omadine (zinc pyrithione) and selenium disulphide, proteins, emollients such as lanolin, isopropyl myristate, glyceryl isostearate or propylene glycol distearate, dyes, perfumes and waxes. Water insoluble particulate solids including exfoliants such as talc, clays, polymer beads, sawdust, silica, seeds, ground nutshells and dicalcium phosphate, pearlisers such as mica or glycerol or ethylene glycol mono- or di-stearate, glitter additives and sunscreens such as titanium dioxide may be dispersed in the hot microemulsion prior to cooling. Porous particles (so called micro-sponges) containing absorbed active ingredients or gelatin or other microcapsules may be suspended. Other active ingredients which may be suspended include insect repellants and topical pharmaceutical preparations, e.g. preparations for treatment of acne, fungicides for athlete's foot or ringworm or antiseptics or antihistamines. Pigments, such as the iron oxides, may also be added.

Electrolytes tend to break I_1 phase structure and are preferably present in concentrations below 10% based on total weight of the compositions, more preferably below 5%, e.g. 0 to 3%, most preferably 0 to 1%. Generally we prefer that electrolyte be substantially absent. Adventitious chloride or sulphate present as impurities in the surfactant can be tolerated. Small amounts of builder such as citrates, pyrophosphates, polyphosphates may optionally be included.

Water soluble solvents are generally undesirable and are not required to form stable I_1 structures according to the invention. We therefore prefer that they should be substantially absent. Although small amounts of, for example, ethanol or propanol or of a water miscible polyhydric alcohol or alcohol ester may sometimes be desired for special purposes, they are preferably present in amounts less than 5% by weight, more preferably less than 3% by weight, most preferably less than 2% by weight, e.g. less than 1% by weight.

The composition may optionally contain hydrotropes such as sodium lower alkyl benzene sulphonate e.g. sodium toluene, xylene or cumene sulphonate or urea, however these are not generally necessary and are not generally preferred. We prefer that these should be present in quantities less than 5% by weight, more preferably less than 4%, especially less than 2% e.g. 0 to 1%. They may be useful occasionally to avoid haziness of the gel.

The total amount of water is preferably from 25 to 60% by weight of the composition, more preferably 30 to 50%, e.g. 35 to 50%. The total weight percentage of surfactant based on the weight of the composition is preferably from 15 to 35%, e.g. 20 to 30%. The proportion of oil is preferably greater than 5%, more preferably greater than 8%, e.g. 10 to 30%, especially 15 to 25% by weight based on the weight of the composition. The oil soluble surfactant is preferably present in a proportion of more than 1:5 based on the weight of oil, more preferably from 1:2 to 5:1. The oil soluble surfactant preferably has an HLB of from 3 to 9 e.g. 4 to 8.

The weight ratio of water soluble surfactant to oil soluble surfactant is preferably 1:1 to 30:1, more preferably 2:1 to 20:1, typically 3:1 to 15:1, e.g. 4:1 to 10:1. The water soluble surfactant preferably has an HLB greater than 12, more preferably greater than 13, especially 14 to 19.

The product may be cast into shaped bodies or formed into particles or granules, e.g. by spray cooling a hot solution of the L_1 phase formed on melting the composition.

The composition may be converted into a microemulsion phase by addition of water, by heating above the melting point or by adding electrolyte such as salt and the invention includes L_1 phases when so prepared.

The invention will be illustrated by the following examples:

Example 1

The following ingredients were mixed at 60°C and cooled to form a ringing gel:

Component	Solids (%)	w/w (%)
MINERAL OIL (100%)	20	20
"EMPICOL"® 0251/70J (70%)	11.2	16
"EMPIGEN"® BB (30%)	4.8	16
"GLUCAPON"® 215 CS UP (65%)	6	9.2
"EMPILAN"® KB2 (100%)	7.5	7.5
SODIUM CHLORIDE (100%)	2	2
PERFUME (100%)	0.5	0.5
ETHYLENE DIAMINE TETRACETIC ACID (100%)	0.1	0.1
CITRIC ACID (100%)	0.2	0.2
BENZOIC ACID (100%)	0.3	0.3
SODIUM HYDROXIDE (47%)	0.1	0.2
WATER	---	Balance

The method of mixing comprised the following steps:-

1. Charge 50% of water
2. Heat to 60°C
3. Add EDTA, sodium benzoate, citric acid and 47% NaOH dissolve with stirring
4. Add "EMPIGEN" BB
5. Add mineral oil and disperse with stirring
6. Add "EMPILAN" KB 2 and mix thoroughly
7. Add "EMPICOL" 0251/70j
8 Add remaining water
9 Add "GLUCAPON" 215 CS UP
10. Add further KB 2 until clear
11. Cool
12. Add evaporated water
13. Adjust pH

		Physical Data	
pH (10%)	: 5.5 ± 0.1	Density @ 20°C	: 1.0 ± 0.1 g cm^{-3}
Solids (%)	: ~ 53% (typical)	Appearance	: Clear or Hazy Gel
Odour	: Characteristic	Set Point (typical)	: 30°C
Viscosity @ 20°C	: N/A		

The product was examined by x-ray diffraction and exhibited peaks at 13.145nm (intense and sharp), 7.943nm (ill defined) and 6.355nm (small), indicating cubic symmetry, and formed a clear microemulsion on dilution or heating. The latter gave good even distribution of oil applied to skin.

Example 2

The following ingredients were mixed at 60°C and cooled to form a ringing gel:

Component	Solids (%)	w/w (%)
MINERAL OIL (100%)	15	15
"EMPICOL"® CDL30J/35 (22%)	8	35.4
"EMPIGEN"® BB (30%)	8	26.7
"EMPICOL"® 0785 (40%)	2	5
"EMPILAN"® KB2 (100%)	6	6
"EMPILAN"® KB6 (100%)	6	6
CITRIC ACID (100%)	0.5	0.5
PERFUME (100%)	0.2	0.2
ETHYLENE DIAMINE TETRACETIC ACID (100%)	0.2	0.2
"KATHON"®	---	0.2
WATER	---	Balance
TOTAL	**45.8**	**100**

Physical Data

Appearance	: Clear Liquid/Gel	Odour	: Characteristic Odour
Solids	: 36.5% (typical)	pH (100%)	: 5.5 - 6.5 (typical
Odour	: Characteristic	Set Point	: 20 ± 5°C

Viscosity (Carrimed Rheometer @ 20°C : N/A

The product had small angle x-ray diffraction peaks characteristic of cubic symmetry and formed a clear microemulsion on dilution with water or warming. The latter gave good even deposition of oil on skin.

Examples 3 and 4

The following ingredients were mixed at 60°C and cooled to form ringing gels:

Component	1		2	
	Solids (%)	w/w (%)	Solids (%)	w/w (%)
"EMPIGEN"® CDL30J/35 (22%)	8	36.4	8	36.4
"EMPIGEN"® BB (30%)	8	26.7	8	26.7
"EMPICOL"® LB40 (40%)	4	7.5	3	7.5
"EMPICOL"® CVH (90%)	4	4	---	---
"EMPILAN"® KB2 (100%)	5.5	5.5	6	6
TRIETHANOLAMINE (100%)	1.1	1.1	---	---
CITRIC ACID	1	0.75	0.75	0.75
ETHYLENE DIAMINE TETRACETIC ACID	0.05	0.05	0.05	0.05
"KATHON"® CG (100%)	0.05	0.05	0.05	0.05
LIGHT MINERAL (100%)	14	14	20	20
WATER	---	Balance	---	Balance
TOTAL	**45.7**	**100**	**46.1**	**100**
Appearance	Clear Gel		Clear Gel	

The following ingredients were mixed at 60 ^{0}C and cooled to form a clear 'ringing' gel.

Example 5

Component	Solids (%)	W/W (%)
LIGHT MINERAL OIL ("KRISTOL" ® M14) (100 %)	18	18
"EMPICOL" ® 0251 70 J (70 %)	12	17.2
"EMPICOL" ® CED5 FL (100 %)	5	5
"EMPILAN" ® KBE2 (100 %)	3	3
"EMPILAN" ® KB6 (100 %)	3	3
"EMPIGEN" ® BB (30 %)	3	10
SODIUM CHLORIDE (100 %)	4	4
GLYCEROL (100 %)	2	2
SODIUM HYDROXIDE (50 %)	0.4	0.8
ETHYLENE DIAMINE TETRACETIC ACID (100 %) Na SALT	0.1	0.1
CITRIC ACID (100 %)	0.2	0.2
SODIUM BENZOATE (100 %)	0.3	0.3
WATER	-	Balance

Example 6

Component	Solids (%)	W/W (%)
HEAVY MINERAL OIL ("KRISTOL" ® M70) (100 %)	18	18
"EMPICOL" ® 0251 70 J (70 %)	10.5	15
"EMPICOL" ® CED5 FL (100 %)	6	6
"EMPILAN" ® KB2 (100 %)	3.5	3.5
"EMPILAN" ® KB12 (100 %)	5	5
"EMPIGEN" ® BB (30 %)	3	10
SODIUM CHLORIDE (100 %)	4	4
GLYCEROL (100 %)	2	2
SODIUM HYDROXIDE (50 %)	0.5	1.0
ETHYLENE DIAMINE TETRACETIC ACID (100 %) Na SALT	0.1	0.1
CITRIC ACID (100 %)	0.2	0.2
SODIUM BENZOATE (100 %)	0.3	0.3
WATER	-	Balance

Physical Data

Density @ 20°C	: 1.0 +/- 0.1	pH (10 %)	: 5.5 +/- 0.5
Appearance: Clear or hazy gel		Odour	: Characteristic
Set point (typical): 35 +/- 5°C		Viscosity @ 20°C: N/A	

Method for examples 5 and 6

i) Charge water and heat to 60°C.

ii) Add EDTA, sodium benzoate, citric acid and NaOH. Dissolve with stirring.

iii) Add "EMPICOL" CED5 FL and mix thoroughly.

iv) Add glycerol.

v) Add NaCl and disperse with stirring.

vi) Add "EMPILAN" KBE2 and "EMPILAN" KB6 or "EMPILAN" KB12. Disperse with stirring.

vii) Add "EMPIGEN" BB.

viii) Add mineral and disperse with stirring.

ix) Add "EMPICOL" 0251 70J and disperse with stirring.

x) Add additional nonionic surfactant to clear (if necessary).

xi) Cool to 40°C.

xii) Add evaporated water

xiii) Adjust pH and offload.

Example 7

Component	Solids (%)	W/W (%)
LIGHT MINERAL OIL ("KRISTOL" ® M14) (100 %)	9	9
DOW CORNING DC 556 SILICONE FLUID (100 %)	9	9
"EMPICOL" 0251 70 J (70 %)	12	17.2
"EMPICOL" CED5 FL (100 %)	5	5
"EMPILAN" KB2 (100 %)	3.5	3.5
"EMPILAN" KB12 (100 %)	3.5	3.5
"EMPIGEN" BB (30 %)	3	10
SODIUM CHLORIDE (100 %)	4	4
GLYCEROL (100 %)	2	2
SODIUM HYDROXIDE (50 %)	0.4	0.8
ETHYLENE DIAMINE TETRACETIC ACID (100 %) Na SALT	0.1	0.1
CITRIC ACID (100 %)	0.2	0.2
SODIUM BENZOATE (100 %)	0.3	0.3
WATER	-	Balance

The formulation forms a microemulsion at 60^0C and forms a gel when cooled to ambient temperature.

Example 8

Component	Solids (%)	W/W (%)
HEAVY MINERAL OIL ("KRISTOL" ® M70) (100 %)	15	15
"CERAPHYL" ® GA-D (100 %)	5	5
"EMPICOL" 0251 70 J (70 %)	12	17.2
"EMPICOL" CED5 FL (100 %)	5	5
"EMPILAN" KBE2 (100 %)	3.0	3.0
"EMPILAN" KB12 (100 %)	4.5	4.5
"EMPIGEN" BB (30 %)	3	10
SODIUM CHLORIDE (100 %)	4	4
GLYCEROL (100 %)	2	2
SODIUM HYDROXIDE (50 %)	0.4	0.8
ETHYLENE DIAMINE TETRACETIC ACID (100 %) Na SALT	0.1	0.1
CITRIC ACID (100 %)	0.2	0.2
SODIUM BENZOATE (100 %)	0.3	0.3
WATER	-	Balance

A hazy/opaque emulsion is formed at 60^{0}C and cools to form a clear 'ringing' gel at ambient temperature.

Physical Data

Density @ 20^{0}C : 1.0 +/- 0.1

pH (10 %) : 5.5 +/- 0.5

Appearance: Clear or hazy gel

Odour : Characteristic

Set point (typical): 35 +/- 5^{0}C

Viscosity @ 20^{0}C: N/A

Method for examples 7 and 8

i) Charge water and heat to 60°C.

ii) Add EDTA, sodium benzoate, citric acid and NaOH. Dissolve with stirring.

iii) Add "EMPICOL" CED5 FL and mix thoroughly.

iv) Add glycerol.

v) Add NaCl and disperse with stirring.

vi) Add "EMPILAN" KBE2 and "EMPILAN" KB12. Disperse with stirring.

vii) Add "EMPIGEN" BB.

viii) Blend 50/50 oil phase - oil and cosmetic ingredient. Add to aqueous surfactant solution. Disperse with stirring to form homogeneous emulsion.

ix) Add "EMPICOL" 0251 70J and disperse.

x) Cool to 40°C.

xi) Add evaporated water.

xii) Adjust pH and offload.

If gel is opaque, re-heat and add additional nonionic surfactant or water.

Example 9

Component	Solids (%)	W/W (%)
LIGHT MINERAL OIL ("KRISTOL" ® M14) (100 %)	10	10
"MIGLYOL" ® 810/812S	10	10
"EMPICOL" ® 0251 70 J (70 %)	11	15.7
"EMPICOL" ® CED5 FL (100 %)	6	6
"EMPILAN" ® KBE2 (100 %)	3.5	3.5
"EMPILAN" ® KB12 (100 %)	3.5	3.5
"EMPIGEN" ® BB (30 %)	3	10
SODIUM CHLORIDE (100 %)	5	5
GLYCEROL (100 %)	1	1
SODIUM HYDROXIDE (50 %)	0.5	1
ETHYLENE DIAMINE TETRACETIC ACID (100 %) Na SALT	0.1	0.1
CITRIC ACID (100 %)	0.2	0.2
SODIUM BENZOATE (100 %)	0.3	0.3
WATER	-	Balance

Hazy emulsion clears to form a microemulsion on cooling and 'ringing' gel is obtained at ambient temperature.

Example 10

Component	Solids (%)	W/W (%)
LIGHT MINERAL OIL ("KRISTOL" ® M14) (100 %)	10	10
"MIGLYOL" ® 818 (100 %)	10	10
"EMPICOL" ® 0251 70 J (70 %)	11	15.7
"EMPICOL" ® CED5 FL (100 %)	6	6
"EMPILAN" ® KBE2 (100 %)	3.5	3.5
"EMPILAN" ® KB12 (100 %)	5	5
"EMPIGEN" ® BB (30 %)	3	10
SODIUM CHLORIDE (100 %)	5	5
GLYCEROL (100 %)	1	1
SODIUM HYDROXIDE (50 %)	0.5	1
ETHYLENE DIAMINE TETRACETIC ACID (100 %) Na SALT	0.1	0.1
CITRIC ACID (100 %)	0.2	0.2
SODIUM BENZOATE (100 %)	0.3	0.3
WATER	-	Balance

Forms a microemulsion at 60^0C and a 'ringing' gel is obtained after cooling.

Example 11

Component	Solids (%)	W/W (%)
LIGHT MINERAL OIL ("KRISTOL" ® M14) (100 %)	10	10
"MIGLYOL" ® 840	10	10
"EMPICOL" ® 0251 70 J (70 %)	11	15.7
"EMPICOL" ® CED5 FL (100 %)	6	6
"EMPILAN" KBE2 (100 %)	3.5	3.5
"EMPILAN" ® KB12 (100 %)	5	5
"EMPIGEN" ® BB (30 %)	3	10
SODIUM CHLORIDE (100 %)	5	5
GLYCEROL (100 %)	1	1
SODIUM HYDROXIDE (50 %)	0.5	1
ETHYLENE DIAMINE TETRACETIC ACID (100 %) Na SALT	0.1	0.1
CITRIC ACID (100 %)	0.2	0.2
SODIUM BENZOATE (100 %)	0.3	0.3
WATER	-	Balance

Physical Data

Density @ 20^{0}C : 1.0 +/- 0.1	pH (10 %) : 5.5 +/- 0.5
Appearance: Clear or hazy gel	Odour : Characteristic
Set point (typical): 35 +/- 5^{0}C	Viscosity @ 20^{0}C: N/A

Method for examples 9, 10 and 11

i) Blend 50/50 oil phase – oil and cosmetic ingredient. Heat to 60^{0}C.

ii) Add glycerol and stir to disperse.

iii) Add "EMPILAN" KBE2 and "EMPILAN" KB12. Disperse with stirring.

iv) Add "EMPICOL" CED5 FL.

v) Add "EMPIGEN" BB.

vi) Add "EMPICOL" 0251 70J.

vii) Add EDTA, citric acid, sodium benzoate and NaCl. Disperse with stirring.

viii) Add water.

ix) Add NaOH.

x) Cool to 40^{0}C.

xi) Add evaporated water.

xii) Adjust pH and offload.

Example 12

Component	Solids (%)	W/W (%)
EMOLLIENT – FATTY ACID ESTER (100 %)	20	20
"EMPICOL" ® 0251 70 J (70 %)	12	17.2
"EMPICOL" ® CED5 FL (100 %)	5	5
"EMPILAN" ® KB6 (100 %)	5	5
"EMPIGEN" ® BB (30 %)	3	10
SODIUM CHLORIDE (100 %)	5	5
GLYCEROL (100 %)	1	1
SODIUM HYDROXIDE (50 %)	0,4	0.8
ETHYLENE DIAMINE TETRACETIC ACID (100 %) Na SALT	0.1	0.1
CITRIC ACID (100 %)	0.2	0.2
SODIUM BENZOATE (100 %)	0.3	0.3
WATER	-	Balance

Clear gels have been prepared using the following fatty acid esters:

Isopropyl laurate ("ESTOL" ® IPL 1505)
Isopropyl myristate ("ESTOL" ® IPM 1512)
Isopropyl palmitate ("ESTOL" ® IPP 1517)
Isopropyl isostearate ("SCHERCOMOL" ® 318)

Physical Data

Density @ 20^0C : 1.0 +/- 0.1

pH (10 %) : 5.5 +/- 0.5

Appearance: Clear or hazy gel

Odour : Characteristic

Set point (typical): 35 +/- 5^0C

Viscosity @ 20^0C: N/A

Method for example 12

i) Heat oil phase to 60^0C.

ii) Add "EMPILAN" KB6 and stir to disperse.

iii) Add glycerol and stir to disperse.

iv) Add "EMPIGEN" BB.

v) Add "EMPICOL" CED5 FL.

vi) Add "EMPICOL" 0251 70J.

vii) Add EDTA, NaCl, sodium benzoate and citric acid. Stir to disperse.

viii) Add water.

ix) Add NaOH.

x) Cool to 40^0C.

xi) Add evaporated water.

xii) Check pH (10 %).

xiii) Adjust pH and offload.

The products in each case exhibited cubic symmetry and formed clear microemulsions or dilution with water or heating. The registered trade marks noted above have the following significance:-

"EMPICOL" CVH is a C_8 alkyl ether carboxylic acid

"EMPICOL" LB40 is a C_8 C_{10} alkyl sulphate

"EMPICOL" 0251/70J is a C_{12-14} alkyl 3 mole ethoxy sulphate

"EMPICOL" 9758 is a C_{10} alkyl sulphate

"EMPICOL" CED 5FL is lauryl 6 mole ethoxy carboxylic acid

"EMPIGEN" BB is a C_{12-14} alkyl betaine

"EMPIGEN" CDL is coconut ampho acetate

"EMPILAN" KB2 is a C_{12-14} alkyl 2 mole ethoxylate

"EMPILAN" KB6 is a C_{12-14} alkyl 6 mole ethoxylate

"EMPILAN" KB12 is a C_{12-14} alkyl 12 mole ethoxylate

"GLUCAPON" 215CS is a C_{8-10} alkyl polyclucoside D.P. 1.5

"KATHON" CG is a proprietary biocide

"DOW CORNING" DC556 is phenyl trimethicone

"CERAPHYL" GA-D is maleated soya bean oil

"MIGLYOL" 810/812S is capric/caprylic triglyceride

"MIGLYOL" is capric/caprylic/linoleic trigyceride

"MIGLYOL" 840 is dipropylene glycol dicaprylate/dicaprate

CLAIMS

1. A concentrated personal cleansing composition comprising, by weight of the composition, at least 20% water, 10 to 40% total surfactant and 2 to 40% of oil wherein said surfactant comprises (A) an oil soluble surfactant having an HLB of from 2 to 10 in a proportion of from 8:1 to 1:5 based on the weight of oil and (B) a hydrophilic surfactant having an HLB greater than 11, in a weight proportion of from 1:1 to 1:30 based on the weight of (A), said surfactant water and oil being present in proportions adapted to form an I_1 phase having an I_1/L_1 transition temperature greater than 25°C.

2. A composition according to claim 1 wherein the total surfactant has a mean HLB between 10 and 15.

3. A composition according to claim 1 wherein said oil comprises a mineral, fatty ester, glyceride, terpene or silicone oil

4. A composition according to either of claims 1 and 3 wherein the oil comprises at least 16% based on the weight of oil, of a mineral oil.

5. A method for preparing a composition according to claim 1 comprising : (i) forming a mixture (a) of said oil and said oil soluble surfactant; (ii) mixing said mixture (a) with a mixture (b) of said water soluble surfactant and sufficient water to form a lamellar phase with said water soluble surfactant; (iii) maintaining said mixture of (a) and (b) above the I_1/L_1 transition temperature of said composition while diluting said mixture of (a) and (b) with water to form said composition; and (iv) cooling said composition below the I_1/L_1 transition temperature.

FORM PTO-1390 (REV 9-2001) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER: 01795/HG

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

APPLICATION NO. (If known, see 37 CFR 1.5)

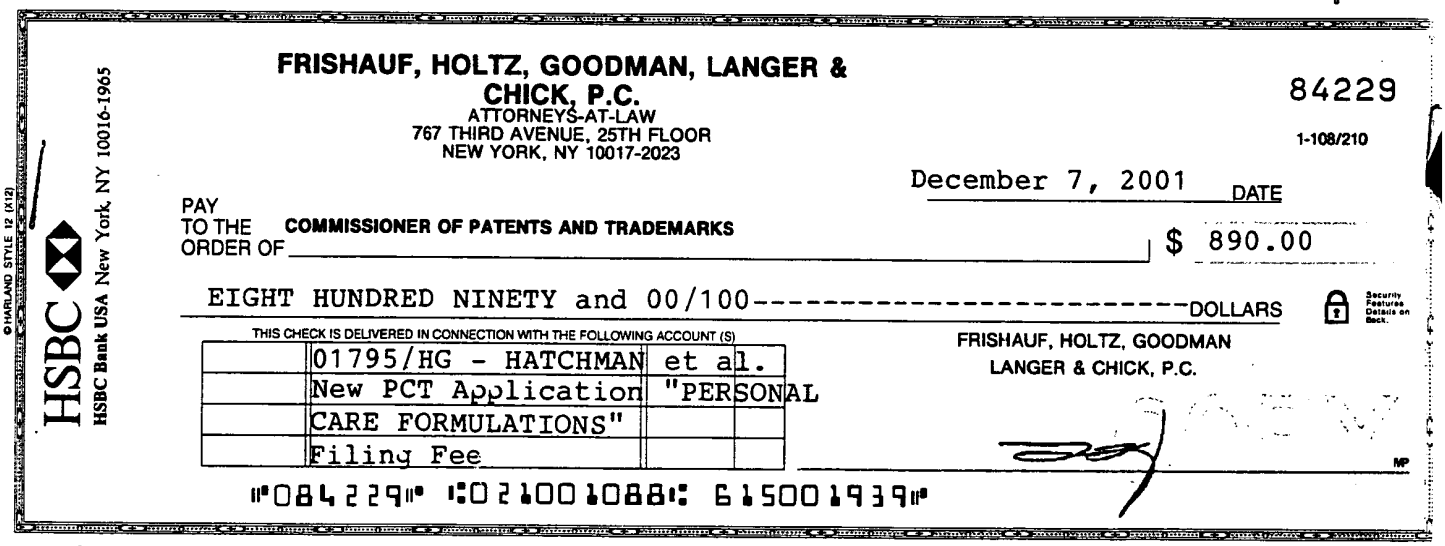
INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/EP00/05341	JUNE 9, 2000	JUNE 10, 1999

TITLE OF INVENTION: PERSONAL CARE FORMULATIONS

APPLICANT(S) FOR DO/EO/US: Kevan HATCHMAN, Elvin LUKENBACH, Laura MCCULLOCH and Benjamin WIEGAND

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. [ ] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. [ ] This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.
4. [X] The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. [X] A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. [X] is attached hereto (required only if not communicated by the International Bureau). (As WO 00/76460 A2)
   b. [X] has been communicated by the International Bureau.
   c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US).
6. [ ] An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
   a. [ ] is attached hereto.



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	01795/HG - HATCHMAN et al.		
	New PCT Application "PERSONAL		
	CARE FORMULATIONS"		
	Filing Fee		

FRISHAUF, HOLTZ, GOODMAN LANGER & CHICK, P.C.

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12. [ ] An assignment document ...

13. [X] A FIRST preliminary amendment.
14. [ ] A SECOND or SUBSEQUENT preliminary amendment.
15. [ ] A substitute specification.
16. [X] A change of power of attorney and/or address letter.
17. [ ] A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
18. [ ] A second copy of the published international application under 35 U.S.C. 154(d)(4).
19. [ ] A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
20. [X] Other items or information:

(i) Copy of WO 00/76460 A2
(ii) PCT/ISA/210 (Search Report)
(iii) PCT/IB/304 (Priority Document Sent)
(iv) PCT/IB/308 (Appln. sent to U.S.)
(v) REQUEST FOR PUBLICATION OF ASSIGNMENT INFORMATION

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I hereby certify that this paper is being deposited with the United States Postal Service 'Express Mail Post Office to Addressee' service under 37 CFR 1.10 on the date indicated above and is addressed to the Asst. Commissioner for Patents, Washington, D.C. 20231